NEW PLANT INTRODUCTIONS

DESCRIPTIONS OF IMPORTED SEEDS AND PLANTS
WHICH WILL BE SENT TO EXPERIMENTERS

SIXTH ANNUAL LIST

1916–17

SPECIAL NOTICE. THOSE WHO DESIRE TO EXPERIMENT WITH ANY OF THESE SEEDS OR PLANTS SHOULD APPLY WITHOUT DELAY, AS SHIPPING ARRANGEMENTS ARE NOW BEING MADE. THE PLANTS ARE ALLOTTED AS THE REQUESTS ARE RECEIVED

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION
BUREAU OF PLANT INDUSTRY
UNITED STATES DEPARTMENT OF AGRICULTURE

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F. S. & P. I.—1.

NEW PLANT INTRODUCTIONS, 1916-17.

INTRODUCTORY NOTE.

This catalogue describes more than 500 species or varieties of foreign plants, most of which have not been grown to any extent in this country. Our familiarity with them is consequently very limited and they are not like standard seeds and plants, the behavior of which can be predicted with more or less certainty.

They have been imported for trial because of some direct or indirect use which it is believed can be made of them by Americans. They are introduced primarily for use by the experts of the United States Department of Agriculture and the State experiment stations of the country, but many of them will be available to such private experimenters as have the necessary facilities and desire to test them.

Since these plants must ultimately be grown by private individuals before their commercial success is assured, it may be well to point out that private experimenters who test these problematical new plants are assisting in a very practical way in the plant-introduction work of the country, even though they are not paid for their work. It is often around the successful cultivation of a new introduction by some private individual that a new plant industry begins.

The plants imported by the United States Department of Agriculture through this office are in most cases so little known to experimenters that their scientific or even common names alone would convey little idea of their character. To distribute them under a name simply, depending upon the experimenters to look them up in a catalogue, entails a burden upon the investigator which often results in his being at the close of the year ignorant of the uses of the new plant. To enable him at any time to refresh his memory as to the use of any one of these introductions, special labels have been devised upon which are printed about sixty words of description. These descriptive labels are attached to the plants when they are sent out. This catalogue is made up of the identical descriptions which will appear upon them.

The information on the labels consists of the Seed and Plant Introduction (S. P. I.) number, under which the plants are known at all times, of the scientific name, a common name (when one has been adopted for this country), a brief description of the plant with its uses, and, where possible, a suggestion of the general region to which the plant is likely to be adapted.

In some instances few or no plants of the exact number given in the description may be available for distribution, but in such cases plants of the same species and variety under another introduction number may be substituted.

At the end of this catalogue is given a complete check list of all plants ready for distribution during the season of 1916–17. This includes not only those plants of which descriptions appear in the body of the catalogue, but a large number which are not so described, either because only a few plants are now available for distribution or because the data available regarding them are too meagre to warrant the publication of a label.

Requests for material in this catalogue should be made by checking the plants wanted in the check list sent out with the catalogue and after filling out the blanks on the front of that list returning it *promptly* to the Office of Foreign Seed and Plant Introduction. At the same time the experimenter should check the plants in the check list at the end of his catalogue, retaining that for future reference. It will aid this office in its distribution work if each experimenter will fill out all blanks, check the list carefully, and make no other notes or requests on the check list itself. Requests for plants not on the check list or notes on plants received heretofore should be made in a separate letter.

The number of plants available for distribution under many of the numbers listed is quite limited, and it will therefore be impossible to fill all requests.

All seeds and plants imported by this office are examined by the inspectors of the Federal Horticultural Board upon arrival, and the plants grown from these original importations are further inspected before being sent out. Every effort is being made to insure the distribution only of seeds and plants which are perfectly healthy and do not harbor any injurious plant diseases or insect pests.

Since the electrotype slugs of all descriptions in this and previous catalogues are kept in stock in this office, experimenters having plants growing from previous distributions who desire to relabel them can secure new labels by sending in a twig of the plant the label of which is lost and furnishing information as to the year in which it was sent and any other available data.

DAVID FAIRCHILD,
Agricultural Explorer in Charge.

OFFICE OF FOREIGN SEED AND PLANT INTRODUCTION,
Washington, D. C., October 1, 1916.

DESCRIPTIVE LIST.

27810. ABELMOSCHUS ESCULENTUS. **Okra.** From F. N. Meyer, Erivan, Caucasus, Russia. A native Caucasian variety of okra, said to be of good quality. To be tested under irrigation in the hot-summered, arid, and semiarid sections of the United States.

18578. ACER TRUNCATUM. **Maple.** From F. N. Meyer, Weitsan Mountains, near Peking, China. Tree up to 25 feet high, with handsome, dense foliage. The leaves are 2½ to 4 inches across, with usually 5 narrow lobes, light green when mature, but purplish when unfolding. One of the most beautiful of the Chinese maples. Half hardy in Ottawa.

ACHRADELPHA MAMMOSA. **Sapote.** Large tropical American fruit tree, 30 to 100 feet high. The fruit is elliptical, about 6 inches long, with thick woody skin, within which is the soft, melting, reddish salmon-colored flesh, about the consistency of a ripe cantaloupe, surrounding the single large seed. The flesh has a very sweet taste, almost cloying, but makes excellent jam and delicious marmalade.

37382. ACROCOMIA SCLEROCARPA. **Macaúba palm.** Collected by Messrs. Dorsett, Shamel, and Popenoe, Lavras, Minas Geraes, Brazil. Beautiful pinnate-leaved palm, strong, rapid grower. Produces clusters of fruit weighing 60 to 80 pounds. Fruits consist of hard kernel surrounded by white, starchy mucilaginous material. Hogs prefer them to corn and fatten on them.

ACTINIDIA CHINENSIS. **Yangtaw.** Deciduous, trailing vine, with handsome white flowers, occurring wild in eastern China. Dicœcious; the pistillate plants produce fruits resembling in size and shape small plums, with delicate gooseberry flavor. Eaten raw; makes delicious jelly. For testing for porch decoration and fruiting in the mild-wintered regions of the United States. (Pl. I.)

40332. ACTINIDIA sp. From D. F. Higgins, Peking, China. Korean vine, probably identical with or close to *Actinidia chinensis*. Preeminently suited for a high pergola. Leaves velvety green, flowers large, cream white, rather attractive. Fruit reported by Higgins to be most delicious. Called *Da Reh* in Chosen (Korea).

ADANSONIA DIGITATA. **Baobab tree.** Central African tree up to 60 feet high, with enormous trunk, said to reach 30 feet or more in diameter. Wood soft, leaves somewhat resembling those of the horse-chestnut. The bark furnishes an extremely strong fiber often used for rope making. The fruits are called "monkey's bread." They are 8 to 12 inches long and have cells filled with slightly acid, agreeable pulp. The leaves are said to be used for medicinal purposes.

39542. ADENANTHERA PAVONINA. **Circassian bean.** From Charles T. Simpson, Littleriver, Fla. A large, handsome tree from tropical Asia, with graceful, pinnate foliage and spiral pods of hard, bright-red seeds the size of beans. Used as food by the natives of India and often strung into necklaces. For trial in regions free from injurious frosts.

10727. ADENOCARPUS FRANKENIOIDES. From Alaricus Delmard, Monte, Canary Islands. Evergreen leguminous shrub, with velvety branches, delicate, hairy leaves, and yellow flowers produced in terminal racemes. Very ornamental for planting in shrubbery.

39837. ADENOPHORA VERTICILLATA. From Mr. L. S. Palen, Harbin, Manchuria. A Campanulalike border perennial with whorled leaves and pale-blue, bell-shaped flowers arranged in irregular clusters near the top of the stem or along the lower part of the stem in whorls. Said to make delicious early greens for stewing and to possess an excellent flavor superior even to spinach.

41261. AGYNEJA IMPUBES. Ornamental shrub, occasionally a small tree. From F. N. Meyer, Mokanshan, Chekiang, China. Attains a height of 2 to 20 feet; produces annual branches which resemble pinnate leaves on which are borne the whitish flowers and bright scarlet fruits. Of value as a garden and park shrub in mild-wintered regions.

ALBIZZIA AMARA. Moderate-sized ornamental and timber tree, with graceful, leathery foliage and globular heads of yellow flowers with long, exserted, pinkish stamens. Wood strong, fibrous, close-grained, and durable. Sapwood large; heartwood purplish brown, beautifully mottled, extremely hard, with alternate light and dark bands. The tree also yields a good gum not very much known. Native of Abyssinia and western India.

ALBIZZIA LEBBECK. **Lebbeck.** Remarkable avenue tree of rapid growth; also valuable for lumber, which seasons, works, and polishes well and is fairly durable. Bark used for dyeing and tanning. Gum is produced freely. Flowers much sought after by bees. Hardy in southern Florida, where it should be tested as an avenue tree. Native of tropical Asia and northern Australia.

ALBIZZIA MOLUCCANA. A large leguminous tree, native of the Molucca Islands and widely distributed through insular and continental India. Appears to be well adapted to avenue planting in southern California and Florida because of its delicate feathery foliage and ornamental flowers, produced in small, globular heads.

38995. ALBIZZIA sp. From Mr. L. J. Mackintosh, Darjiling, India. An ornamental tree closely allied to Acacia. Chiefly grown for its graceful, feathery foliage and attractive flowers. Cultivation is the same as for the acacias. Distributed to test its hardiness.

ALEGRIA DIVARICATA. **Sota caballo.** Ornamental flowering tree used also as a timber tree. Somewhat resembles the basswood or linden in appearance and foliage, but the rather large white to rose colored flower clusters are much more showy. The wood is light, nearly white, and could undoubtedly be used much as basswood is used in the United States. Native of Argentina. Formerly *Luehea divaricata.*

ALEURITES CORDATA. **Kiri-oil** tree. Smooth-barked tree, 20 to 30 feet high, with large 3 to 5 lobed leaves; from southeastern Asia and the adjacent islands. From the seeds, which resemble castor beans, is expressed a very valuable drying oil, similar to that from the seeds of the better known tung-oil tree, *A. fordii.* Of possible value in the extreme Southern States.

ALEURITES FORDII. **Tung** or **wood-oil** tree of the Yangtze Valley, China. The large seeds borne in fruits the size of small apples yield 28 per cent of one of the best drying oils known; large importations made into America. Deciduous tree with white flowers; stands frost; 7-year-old tree near Tallahassee, Fla., bore one bushel of fruit; seed not edible.

ALEURITES MOLUCCANA. **Lumbang.** From the Philippine Islands. Tall tree, yielding a commercial oil of quick-drying properties. Forms an attractive shade tree in warm, well-protected localities. Where the seeds are not used for the extraction of oil the half-ripe kernels are considered very palatable when roasted. Close relative of the Tung or wood-oil tree, but strictly tropical.

41056. ALLIUM CEPA. **Onion.** From Col. J. N. Merrill, Teheran, Persia. A very large onion found in western Persia at an elevation of 4,000 feet, in gravelly soil. The onions are as much as 6 inches in diameter by 4 inches in depth. Their flavor is highly esteemed by the Persians, who eat them raw.

40530. ALOE MARLOTHII. From George Thorncroft, Barberton, Transvaal. A conspicuous species about 10 feet high found in the hills near Barberton. The flower stems are branching. Color of flower orange red.

40529. ALOE sp. From George Thorncroft, Barberton, Transvaal. Provisionally named *A. sessiliflora.* Plant 3 feet high, found on rocky hillsides. Sends up flower stems 2 feet high, producing pale yellow flowers.

40531. ALOE sp. From George Thorncroft, Barberton, Transvaal. A stemless species with leaves in a rosette, sending up branched flower stems to the height of 7 feet. Flowers pink. Described by Mr. Thorncroft as the most beautiful aloe known to him.

37906. AMBURANA CLAUDII. From Dorsett, Shamel, and Popenoe, Januaria, Minas Geraes, Brazil. Large leguminous tree with odd-pinnate leaves of 11 to 15 leaflets and large clusters of creamy flowers. The valuable wood, which is much sought after, is used for flooring, window frames, vats, etc. The crushed seeds are used to perfume tobacco. Both wood and seeds have a strong odor of coumarin.

21907. AMPELOPSIS HUMULIFOLIA. From F. N. Meyer, Pangshan, Chihli, China. A woody vine, bearing large, deeply lobed leaves and small clusters of bluish white berries. Grows in dry, rocky situations. May be of use as a cover plant for large rockeries or for planting on terraces where the branches can hang down.

AMYGDALUS COMMUNIS. **Jordan almond.** An important commercial variety of almond, of finest quality, annually imported from Spain in large quantities and used extensively in the manufacture of the best grades of confectionery. On California rich soils the nuts produced are coarser than on thin, light soils of the Spanish Sierras. On *A. davidiana.*

26543. AMYGDALUS COMMUNIS. **Almond.** From Dr. L. Trabut, Algiers, Algeria. A wild form from the mountainous regions of Algeria, found at about 3,300 feet. The tree is of rather large size, robust, and very resistant to drought; recommended by the veteran horticulturist Trabut for use as a stock.

28801. AMYGDALUS COMMUNIS. **Almond.** From F. N. Meyer, Batoum, Caucasus. Seedling of a very small almond, remarkable for its thin shell and good flavor. Believed to have originated in Persia. Some good horticultural varieties may result from the fruiting of this collection of untested seedlings.

29214. AMYGDALUS COMMUNIS. **"Kasan badam" almond.** From F. N. Meyer, Kokand, Russian Turkestan. A large, moderately thin shelled variety, cultivated in a semiarid climate, with long, hot summers and moderately cold winters, on decidedly alkaline soils. For this reason, and for their probably greater hardiness, they may prove superior to almonds introduced from southern Europe. On *A. davidiana.*

29217. AMYGDALUS COMMUNIS. **Almond.** From F. N. Meyer, Kokand, Russian Turkestan. A small, very prolific, soft-shelled variety of almond, called *Khandak badam.* As this variety is cultivated in a semiarid climate, with long, hot summers and moderately cold winters, and on decidedly alkaline soils, it may prove hardier than almonds introduced from southern Europe.

29218. AMYGDALUS COMMUNIS. **Almond.** From F. N. Meyer, Kokand, Russian Turkestan. Medium-sized, hard-shelled variety, cultivated in a semiarid climate, with long, hot summers and moderately cold winters, on decidedly alkaline soils. For this reason, and for their probably greater hardiness, they may prove superior to almonds introduced from Southern Europe. On *A. davidiana.*

30408. AMYGDALUS COMMUNIS. **Almond.** From F. N. Meyer, Yarkand, Chinese Turkestan. A hard-shelled variety of almond imported from Northern India and sold in the bazars there. May be of value as a stock. Budded on *A. davidiana.*

33216. AMYGDALUS COMMUNIS. **Esperanza almond.** From Granada, Spain, through Walter T. Swingle. A variety recommended for culture by Pedro Giraud, nurseryman, of Granada, who points out that almonds give best results on warm, rocky, limestone soils. Grafted on the wild Chinese stock (*A. davidiana*). For trial in the California and Arizona almond regions.

33217. AMYGDALUS COMMUNIS. **De la P. almond.** From Granada, Spain, through Walter T. Swingle. A large, early, hard-shelled variety, recommended by Pedro Giraud, nurseryman, of Granada, who points out that almonds give best results on warm, rocky, limestone soils. Grafted on the wild Chinese stock (*A. davidiana*). For trial in California and Arizona.

33218. AMYGDALUS COMMUNIS. **Desmayo almond.** From Granada, Spain, through Walter T. Swingle. Recommended by Pedro Giraud, nurseryman, as more resistant to frost than other hard-shelled varieties. The peculiar attachment of the flower turns it downward, and corolla and sepals protect organs and insure fertility when other varieties lose their crops from frost. On *A. davidiana.*

AMYGDALUS DAVIDIANA. From F. N. Meyer, Tientsin, China. Important wild dry-land peach used commonly as stock for stone fruits in China. Resists severe droughts and is not affected by quite alkaline soils. Strong vigorous grower; hardier than the Chihli peach in central Iowa; is an especially early stock in California.

37559. AMYGDALUS PEDUNCULATA. From M. M. Timogowitch, Chita, Transbaikalia, Siberia. A bushy, wild peach, 1½ to 6½ feet high, small oblong strongly dentate leaves, and solitary pale red flowers. A very desirable hardy shrub found in the extremely cold region around Lake Baikal, Siberia, and in northeastern Mongolia. Character of fruit unknown, but may have value for breeding purposes.

40000. AMYGDALUS PERSICA. **Peach.** A collection of cultivated and escaped peaches secured along roadsides in the Provinces of Honan, Shansi, Shensi, and Kansu, China. There may be some quite new types of peach among these seedlings, and it is desirable that they be fruited at various points in this country.

40900. AMYGDALUS PERSICA. **Peach.** From F. N. Meyer, Peking, China. A small, hardy variety, with small seeds; said to be grown in the western hills near Peking. To be tested as a stock and experimented with in localities north of the peach belt proper.

AMYGDALUS PERSICA NECTARINA. **Crosby nectarine.** From Rev. P. J. P. Hendriks, Kashgar, Chinese Turkestan. As fruited in America, a juicy, good, rather thin-skinned, medium-sized nectarine, suited to short, hot summers. Not a good keeper. Like all nectarines, more subject to brown-rot than the peach. Careful spraying is necessary to ripen a crop.

AMYGDALUS PERSICA NECTARINA. **Quetta nectarine.** From Lieut. W. L. Maxwell. Seedling from the best nectarine tree in Quetta, British Beluchistan. Spreading, vigorous tree bearing immense quantities of large fruits, green tinged with red. Fruited in California. Pronounced by experts to be exceptionally fine and worthy of wide dissemination, because of its large size and good color, notwithstanding the thin skin. Budded on *A. davidiana.*

26503. AMYGDALUS PERSICA NECTARINA. A large, freestone **nectarine** from E. Cotes, Simla, India. Said to have come from Chinese Turkestan. Fruit creamy yellow, with red blush. Flesh creamy white, red at stone. Juicy, crisp, subacid, and of very good quality. Skin rather tough, but parts readily from the flesh. A good shipper.

29227. AMYGDALUS PERSICA NECTARINA. **Nectarine.** From F. N. Meyer, Samarkand, Russian Turkestan. A yellow, midseason, clingstone nectarine of medium size. The meat is very firm and of medium sweet taste. Especially fit to be grown in arid or semiarid regions under irrigation.

30648. AMYGDALUS PERSICA NECTARINA. **Nectarine.** From F. N. Meyer, Guma, Chinese Turkestan. A small, late nectarine with white fruits. Said to have fresh, sweet taste, and to possess good keeping qualities. Especially fit to be grown in arid or semiarid regions under irrigation.

39428. AMYGDALUS sp. **Wild peach.** From F. N. Meyer, Shensi, China. A wild peach from the mountains south of Sianfu, China. Fruits small, hard, sourish, apparently freestones, red or white fleshed, scarcely edible, but possessing real peach flavor. This may be the progenitor of the cultivated peach and as such should prove especially interesting to breeders.

40001. AMYGDALUS sp. **Wild peach.** Seedlings from seeds purchased on the streets of Sianfu, Shensi, China, by F. N. Meyer. A low, bushy form of spreading habit when wild, but sometimes a 20-foot tree when cultivated. Leaves much smaller, darker green, and more slender than those of the cultivated peach. Varieties appear free from disease and prolific; fruit small; used successfully as a stock and as an ornamental.

40864. AMYGDALUS sp. **Wild peach.** From Camillo Schneider, Lichiangfu, China. Semiwild form, with yellowish fruits. Comes from moderately severe climate and may be a new form. Has not yet fruited in America.

ANNONA CHERIMOLA. **Cherimoya.** Medium-sized shrub or dwarf tree, with evergreen foliage and small yellowish flowers. Fruits roundish, conical, or heart-shaped, 3 to 6 inches in diameter, with pleasantly flavored, sweetish pulp of the consistency of ice cream, with black seeds irregularly embedded in it.

36562. ANNONA CHERIMOLA × SQUAMOSA. A hybrid between the **cherimoya** and the **sugar-apple.** Produced by Mr. Edward Simmonds of the Miami Field Station. It combines the unusual sweetness of the sugar-apple with the firmness and better shipping quality of the cherimoya. The trees show unusual vigor and the quality of the fruit entitles it to a thorough trial.

ANNONA GLABRA. **Alligator-apple.** A small to medium sized evergreen tree, sometimes attaining a height of 45 feet, bearing inedible fruits, the size of a Yellow Bellflower apple, with a smooth leathery skin, green at first, turning yellow. A swamp-loving tree of the American Tropics, introduced for trial as a stock for other edible-fruited anonas.

35590. ANNONA LUTESCENS. **Anona.** From Don Nat. O. y Osuna, Sinaloa, Mexico. A small tree with spreading branches, from northern Guatemala and southern Mexico. Local name, "anona amarilla." Closely related to *A. reticulata,* differing in its broader leaves and its yellow fruit. In appearance the fruit resembles the alligator-apple (*A. glabra*), which is distinguished by its larger flowers.

ANNONA MURICATA. **Soursop.** Small evergreen tree 12 to 18 feet high, bearing ovoid or heart-shaped edible fruits 6 to 8 inches in diameter, weighing up to 5 pounds, with fresh pleasantly acid pulp; excellent for the table and for jellies and preserves. Care must be taken to remove the skin in preparing the fruit for the table. Related to the cherimoya, but not of so delicate a flavor.

ANNONA PURPUREA. A small tree up to 25 feet high, bearing large, nearly spheroid, edible fruits 6 to 8 inches in diameter, covered with a brownish feltlike coat and bearing numerous pyramidal protuberances. Pulp fleshy, fibrous, fragrant, possessing a flavor somewhat like that of a mango. The fruits differ considerably in flavor, but are undoubtedly capable of improvement by careful selection. Native of the Tropics.

ANNONA RETICULATA. **Bullock heart.** A deciduous tree, 15 to 25 feet high, from tropical America. Fruit edible, 3 to 5 inches in diameter, smooth, with the surface divided into rhomboidal areoles by impressed lines, usually reddish or reddish brown when ripe, or red cheeked on the sunny side. Pulp sweetish, somewhat insipid, rather granular. Occurring in tropical regions, but may prove hardy enough for some subtropical regions.

37933. ANNONA SALZMANNI. **Araticum.** From Bahia, Brazil, through Dorsett, Shamel, and Popenoe. Handsome, medium-sized tree resembling the custard-apple, but differing in having thick, leathery leaves with impressed nerves. Its vigorous, robust habit suggests its use as a stock for cherimoya and for breeding purposes.

37911. ANNONA SPINESCENS. **Araticum.** From Urubu, Bahia, Brazil, through Dorsett, Shamel, and Popenoe. Wild, bushy shrub 15 feet high, common on low river banks. Its compact growth and stout spines make it a possible hedge plant. Fruit orange-red, 3 inches long, somewhat resembling cherimoya; edible, but of little value except possibly for hog feed. A possible stock for cherimoya.

ANNONA SQUAMOSA. **Sugar-apple.** Indigenous to the Malay Islands, but now cultivated throughout the Tropics and subtropics. Superior varieties are readily propagated by budding on seedlings of the same species or on *A. glabra.* The roundish fruits, about 4 inches in diameter, contain a soft granular pulp of pleasant, sweet flavor, inclosing numerous seeds.

41384. ANNONA sp. From W. S. Curley, Cajabon, Guatemala. A small-fruited anona probably allied to *A. sericea.* Fruits yellow, corrugated, of excellent flavor, but containing many seeds. Called *tzumuy pac* in the Indian language of Guatemala. Probably tender.

ARALIA CORDATA. **Udo.** A Japanese vegetable suitable for wide cultivation for its blanched, edible shoots. Plant 3 to 4 feet apart. Plants grow bushy and yield edible shoots for nine years. To blanch shoots, mound with earth or cover with closed draintile in early spring. Peel, slice into ice water, and serve with French dressing, or stew and serve like asparagus.

40971. ARDISIA CAPOLLINA. Handsome ornamental shrub from Dr. C. A. Purpus, Zacuapam, Vera Cruz, Mexico. Related to *A. crenulata,* a popular red-berried Christmas plant, from which it is distinguished by the smooth, entire, lanceolate leaves and clusters of wine-colored drupes. The rose-colored flowers are arranged in terminal panicles or clusters.

41644. ARISTOLOCHIA sp. Ornamental climbing vine from H. M. Curran, Rio Contas, Bahia, Brazil. A rapid-growing vine, with velvety, heart-shaped leaves, and very interesting, odd, but not showy flowers. Of possible value as a porch or pergola vine in the Southern States.

ARRACACIA XANTHORRHIZA. **Arracacha.** Perennial herb, 2 to 3 feet high, with deeply divided leaves and small heads of purple flowers. The large and fleshy roots, which have a peculiar pleasant flavor but are slow in reaching maturity, form a most important article of food in South and Central America. Cooked like parsnips, which they resemble. For Gulf States and California.

38890. ARTOCARPUS INTEGRA. **Jack fruit.** From the director of the botanical gardens, Buitenzorg, Java. Thirty feet high, leaves 4 to 6 inches long, varying in shape from obovate entire to lanceolate or even 2 to 3 lobed. Fruits attain length of 18 inches and weight of 30 to 40 pounds. Usually eaten cooked as a vegetable rather than as a fruit. Less palatable than breadfruit. Timber excellent for cabinetwork.

41924. ARUNDINARIA PUMILA. A very dainty ornamental dwarf bamboo, presented by John McLaren, San Francisco, Cal. Culms 15 inches or more high. Leaves about 5 inches long, finely pointed. Resembles *A. humilis*, but has darker green, shorter, more abruptly pointed leaves. Is quite hardy and a very effective ornament for rocky nooks. Is not inclined to spread like most species of Arundinaria.

31835. ASPARAGUS FALCATUS. **Asparagus.** From J. Medley Wood, Natal Botanic Gardens, Durban, Natal, South Africa. A large, spreading, woody vine, with stout gray or brownish stems, 20 to 40 feet long. The cladodes (leaves) are rich dark green, narrow, 2 to 3 inches long, with undulate margins. The fragrant, white flowers are produced in loose racemes, 2 or 3 inches long, in great profusion during midsummer.

40617. ASPARAGUS LUCIDUS. **Tenmondo.** From the Bureau of Productive Industry, Taihoku, Formosa. Perennial herb, producing in summer small yellowish flowers followed by red berries. The tuberous roots are preserved in sugar or used after cooking. The acidity should be removed before use by boiling.

34357. ASPIDOSPERMA MACROCARPON. **Guatambu.** A tree found on the plains in the State of Minas Geraes, Brazil; source of an important commercial timber used in building and for agricultural implements. It has a flat pod several inches in diameter, containing a number of large, flat, paper-winged seeds. A related tree furnishes quebracho, the tanning material of Brazil.

ASSONIA PUNCTATA. A small sterculiaceous tree, native to Mauritius, with smooth firm leaves orbicular and deeply cordate, 3 to 4 inches long, slightly wavy margined. The rose-colored flowers are arranged in umbels of 10 to 20 blossoms each. Reported as hardy in southern California. Seems to promise well for lawn and park planting in the South. A rapid grower.

23471. AVERRHOA BILIMBI. **Cucumber tree.** From Hon. J. E. Conner, Cochin China. Small, oxalidaceous tree with evergreen, odd-pinnate leaves resembling those of the sumac; and racemes of small red flowers produced from the trunk. The cucumber-shaped, acid fruit makes an excellent dish when made into sirup, candied, or pickled. Extensively cultivated in India and South America.

BARLERIA CRISTATA. Small, blue-flowered shrub, cultivated in the Philippines as a hedge plant. Said to be the best in the Tropics for this purpose and to flower all the year through. Often used as a garden shrub in India, where it is native, because of its showy, dense spikes of blue (sometimes purplish or white) flowers. Roots and leaves are used in India to reduce swellings. Seeds supposed to be an antidote for snake bites.

37901. BARYXYLUM DUBIUM. Collected by Dorsett, Shamel, and Popenoe, Minas Geraes, Brazil. A handsome ornamental tree, with bipinnate, mimosalike foliage and beautiful, nearly regular flowers arranged in huge panicles. The leaves are composed of 8 to 24 pairs of oblong leaflets. It is closely related to the Royal poinciana, with which it vies in beauty of flower and foliage; native to Brazil.

BARYXYLUM INERME. Magnificent ornamental leguminous tree with spreading top, fine, graceful, feathery foliage, and large, erect panicles of rusty yellow, fragrant flowers. Tree is large, quick growing, and symmetrical. Native of Ceylon and Malaya. Reported as "specially suited to dry districts," but also thrives to perfection in the moist regions of the Tropics up to 1,800 feet.

BELOU MARMELOS. **Bael fruit.** Handsome tree of the family Rutaceæ, with thin trifoliolate leaves and greenish yellow fruit, usually 4 to 5 inches in diameter. Eaten raw or used for making marmalade or sherbet and other refreshing drinks. Has mild laxative properties. Said to withstand temperature of 20° F. in northwestern India.

40688. BERBERIS AGGREGATA. **Barberry.** From F. N. Meyer, Hsiku, Kansu, China. Low-growing form of this species. A late-blooming, spreading bush, with rosettes of small leaves, dull green above, gray green below, and drooping clusters of small yellow flowers followed by very small red or green-and-red fruits. One of the latest flowering barberries; of special value as a border shrub.

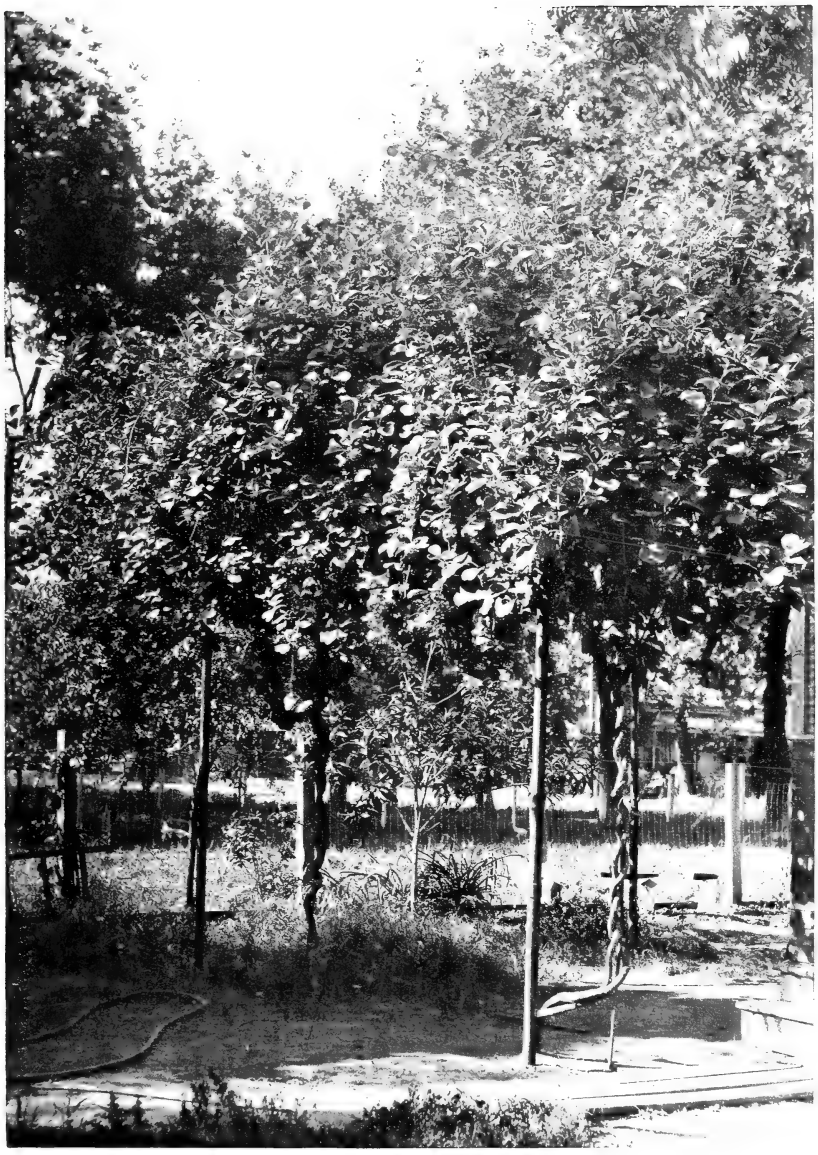
36737. BERBERIS CHINENSIS. **Barberry.** From F. N. Meyer, Hsiao Wutaishan, Chihli, China. A shrub of low growth, 1 to 3 feet high, found between bowlders and rocks at elevations of 4,000 to 6,000 feet. Becomes very showy toward the end of summer when the berries, which are produced in great abundance, assume a bright coral-red color. Of value as an ornamental for rockeries, etc., in the Northern States.

BERBERIS FREMONTI. **Barberry.** An ornamental and fruit-bearing shrub, native of southern and central Texas. In some localities where the species is very abundant, jellies made from the dark-blue berries are offered for sale on the markets. Exceedingly variable bush, 4 to 12 feet in height, with spiny leaves and small oval fruits about the size of currants.

BERBERIS GAGNEPAINII. **Barberry.** Small graceful shrub of neat, compact habit, with clustered stems; the branches set with 3-parted spines one-half to three-fourths of an inch long; firm, dark, dull green leaves with wavy margins set with slender teeth; bright yellow flowers, one-half inch across, in clusters of 6 to 10; and black berries with blue bloom. At Kew, England, it has proved hardy and evergreen, flowering abundantly.

BERBERIS HOOKERI. **Himalayan barberry.** Evergreen shrub 3 to 5 feet high, producing a dense thicket of erect, angled stems set with 3-forked thorns. The leathery leaves, dark green above, glaucous white beneath, nearly stalkless, 1 to 3 inches long. Flowers sulphur yellow, two-thirds of an inch across, sepals tinged with red. Berries black-purple, persistent. Useful for planting where an evergreen is wanted that will keep fairly dwarf without pruning.

BERBERIS HOOKERI VIRIDIS. **Barberry.** From the Himalayas. Differs from the species in having the leathery leaves bright green below instead of glaucous white. Small thorny shrub of dense tangled growth, fairly large sulphur-yellow flowers in clusters, and persistent black-purple berries. Useful shrub for planting where an evergreen is wanted that will keep fairly dwarf without pruning. Probably evergreen only in the South.



THE YANGTAW (ACTINIDIA CHINENSIS) AS A PERGOLA VINE.

This Chinese fruiting vine is too rank a grower to be used as an ordinary porch vine, but when one or two shoots are trained up high, on an overhead trellis, it forms a perfect shade. It has not yet fruited abundantly in this country. Photographed (P663FS–C) at Chico, Cal., April, 1916.

WIDE-OPEN FRUIT OF THE AKEE (BLIGHIA SAPIDA).

One of the showiest and most peculiar of all tropical fruits. Its bright-red fleshy pods open slowly and uncover jet-black seeds partly imbedded in a cream-colored waxy arillus, which when fried in butter tastes strikingly like brains or sweetbreads. The arillus decays rapidly, and if not eaten perfectly fresh becomes poisonous. Photographed (P8725FS) October 12, 1911. (Two-thirds natural size.)

40681. BERBERIS POTANINI. **Barberry.** From F. N. Meyer, Hsiku, Kansu, China. A shrub 3 to 5 feet high, with rather stout branches. Very spiny, glistening foliage; bearing a profusion of scarlet berries nearly one-half inch long. Remarkable for its large fruit and scarlet leaves in the fall. Very drought resistant.

13353. BERBERIS SIEBOLDI. **Barberry.** From the Central Experimental Farm, Ottawa, Canada, through David Fairchild. A hardy, deciduous shrub of rounded form, native of Japan. Very similar to *B. vulgaris*, but more dwarf in habit, usually below 3 feet in height. Leaves thin, medium size, 1 to 2½ inches long. Fruit round, bright yellowish red.

× BERBERIS STENOPHYLLA. **Hybrid barberry.** Handsome evergreen bush, forming a dense thicket of slender interlacing stems. Cross between *B. darwinii* and *B. empetrifolia.* Said to produce a mass of rich, golden-yellow flowers in spring, and to be useful as a lawn bush, covering for a steep bank, or as a hedge plant. Reported hardy in sheltered places at Arnold Arboretum, Boston.

28380. BERBERIS THUNBERGII × VULGARIS ATROPURPUREA. **Hybrid barberry.** Produced by Dr. Walter Van Fleet. Very handsome, yellow-flowered shrub of somewhat more open habit than *B. thunbergii* and possessing slightly larger leaves, which, however, retain the beautiful deep-purple color of *B. vulgaris atropurpurea.* A very promising ornamental, deserving trial as a park, lawn, or garden shrub.

BERBERIS WILSONAE. **Mrs. Wilson's barberry.** A dwarf, much-branched shrub, densely clothed with gray-green leaves about half an inch long, which turn a beautiful crimson in the fall. Spines nearly an inch long. Flowers a rich golden. Noteworthy for its nearly round, coral or salmon red, somewhat translucent fruits, which are borne very abundantly. Discovered by E. H. Wilson in western China.

BERBERIS YUNNANENSIS. Western Chinese **Barberry.** Handsome, deciduous, spiny shrub, 3 to 6 feet high, of dense rounded habit. The leaves, mostly entire on the flowering shoots but toothed on the others, turn a brilliant crimson in the autumn. The pale-yellow, clustered flowers (three-fourths of an inch across) and the bright-red, oval berries (one-half inch long) are among the largest in the genus.

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40687. BERBERIS sp. **Barberry.** From F. N. Meyer, Kagoba, Kansu, China. An ornamental barberry of very low growth, being only 1 to 3 feet high. The leaves are very small and the very ornamental, bright scarlet berries are produced in great profusion. Found along embankments at 6,000 to 10,000 feet elevation. Of value as a border shrub in the colder sections of the United States.

40154. BETULA ERMANI. **Erman's birch.** Eastern Asiatic tree, said to reach 100 feet in height, with creamy-white, peeling bark on the trunk and orange-brown bark on the branches. Leaves broadly ovate, with nearly straight base, taper pointed, coarsely toothed; stalk one half to 1 inch long. Tender; very liable to injury by spring frosts, owing to its early start into growth.

39989. BETULA SCHMIDTII. **Birch.** Presented by the Arnold Arboretum, Jamaica Plain, Mass. A stately tree with smooth alternate branches, nearly ovate leaves with rounded base and somewhat taper-pointed tip. Buds smooth. Catkins stalked. Seeds slightly winged. Native of Eastern Asia.

BLIGHIA SAPIDA. **Akee.** African tree, with remarkable showy, red fruit, opening like a pod, exposing large black seeds embedded in a waxy substance (the aril), which, when fried in butter or stewed in milk, resembles a very delicate morsel of sweetbread. Only the arils from perfectly fresh fruits should be used, as cases of poisoning are reported from use of arils from old fruits. Tree has fruited successfully in southern Florida. (Pl. II.)

BRASSICA PEKINENSIS. **Pai ts'ai** or **Chinese cabbage.** From various sources in North China. A fall cabbage, *not suitable for spring planting*, as it goes to seed. Sow in July in rows; begin manuring heavily when 4 inches high. Harvest after first light frost; heads long, cylindrical, not very firm. By cutting off all green leaf tips it can be cooked without penetrating cabbage odor.

42725. BRITOA ACIDA. From H. M. Curran, San Martin de Loba, Colombia. Small tree or shrub bearing rather large guava-like fruits with soft yellow juicy and very acid flesh. Few seeds. Said to make a delicious conserve. The wood is used in Brazil for tool handles, carving, etc. Bark and leaves reported medicinal. Related to "Guava." Native of Brazil.

41323. CAESALPINIA PECTINATA. **Tara.** From O. F. Cook, Urubamba Valley, Peru. Tall, erect, spiny shrub or small, handsome tree with deep-green, shiny foliage. Flowers inconspicuous, but numerous bright-scarlet pods are produced which were formerly used for black dye and ink. These form attractive contrast with the dark foliage. The erect growth of the shoots tends to make a close, effective hedge or windbreak.

32924. CAJUPUTI CUTICULARIS. From Alwyn Berger, La Mortola, Ventimiglia, Italy. Tall shrub or small tree with tortuous, somewhat rigid branches; the bark deciduous in paperlike layers; opposite thick leaves one-fourth to one-half inch long. Male flowers usually in terminal heads; the perfect flowers occasionally in dense oblong or cylindrical spikes, yellow. Native of Dutch East Indies. Formerly known as *Melaleuca cuticularis*.

42829. CALPURNEA AUREA. Presented by the director, Department of Colonization, Asmara, Eritrea, Africa. Tall, ornamental shrub, related to Sophora, which it resembles somewhat in its foliage and the arrangement of the inflorescences. The bright-yellow pea-shaped flowers are, however, much showier than the nearly white blooms of Sophora. Blossoms in winter. Native of subtropical Africa.

CARAGANA ARBORESCENS. **Siberian pea tree.** Hardy ornamental shrub or small tree up to 20 feet high, with pale or bright yellow flowers three-fourths inch long. Extensively grown in Russia; trimmed low for ornamental hedges. Very drought resistant; used by the Russian Government as a nurse tree in dry, young timber tracts. For testing as an ornamental and as a windbreak in cold regions.

40157. CARAGANA AURANTIACA. From the Royal Botanic Gardens, Kew, England. Deciduous shrub 4 feet high, with graceful, ultimately pendulous, leafy branches, armed with triple spines one-fourth of an inch long. Leaves nearly sessile, composed of four narrow leaflets, one-third to one-half of an inch long. Orange-yellow flowers three-fourths of an inch long, produced in great profusion from the underside of the branches. Easily propagated by late summer cuttings.

22981. CARAGANA sp. **Fei chong.** From Soochow, Kiangsu, China. Collected by F. N. Meyer. A low-growing leguminous shrub, far from being common. In China it is cultivated in pots as an ornamental plant, bearing bronze-yellow flowers. It will probably not prove hardy in the North.

40711. CARAGANA sp. From F. N. Meyer, Taochow, Kansu, China. Spiny shrub of low, dense growth, found in dry loess soil and in pebbly banks at altitudes of 9,500 feet and over. Used in China as a hedge plant. Able to withstand low temperatures and great drought; of value as a hedge plant for the dry, colder sections of the United States.

CARICA CANDAMARCENSIS. **Mountain papaya.** Colombian tree, smaller than *C. papaya;* presumably hardier, with much smaller, more angular fruits of too acid a flavor for dessert, though very agreeable when stewed; also used for jams and preserves. Ripe fruit has a pleasant, applelike odor. Introduced for test of papain quality and for hybridization with *C. papaya.*

CARICA PAPAYA. **Papaya.** Rapid growing fruit tree, reaching 25 feet; in 10 months bears numerous melon-shaped fruits on its trunk. Good varieties deliciously sweet, with characteristic flavor; relished as a breakfast fruit. Easily digested, containing powerful papain ferment. Try as annual in northern Florida and Texas. Easily grown in hothouse. Both sexes required.

41339. CARICA sp. **Papaya.** From O. F. Cook, Ollantaytambo, Peru. A papaya tree of nearly the same size and general appearance as the familiar type, but with the fruits much smaller and more deeply grooved. The flesh is inferior in texture to that of the true papaya, but greatly superior in odor and taste and probably also in keeping qualities.

CARISSA CARANDAS. A small, apocynaceous tree or large shrub, with sharp, rigid, forked thorns and oval leaves. The fruit when ripe much resembles a damson; is smaller than that of *C. grandiflora.* In India it is made into a pickle just before it is ripe, and is also used in tarts and puddings. When ripe it makes a very good jelly. Not so attractive a hedge plant as *C. grandiflora,* but may prove hardier.

CARISSA GRANDIFLORA. South African **amatungulu.** A handsome apocynaceous spiny shrub, with glossy green leaves, white fragrant flowers, and ovoid scarlet fruits an inch long. Useful home garden fruit, with a flavor when stewed peculiarly like that of cranberries. Fruit may be dried like prunes. A most attractive evergreen hedge plant. Stands clipping well, and its spines make it quite impenetrable.

CARYOPTERIS INCANA. Handsome blue-flowered deciduous bush, valuable both as a fall-blooming ornamental shrub and as one of the best of late-flowering bee plants; of spreading habit, 4 to 8 feet high; the whole plant, except the old wood and the upper surface of the dull green leaves, covered by a close gray felt. Flowers bright violet-blue, produced in September and October in numerous, axillary clusters.

CASTANEA MOLLISSIMA. **Chinese chestnut.** From North China. Collected by F. N. Meyer from old trees in a region where the chestnut bark disease has probably existed for centuries. High degree of resistance, but entire immunity not probable. Hardy tree, not valuable for timber, being only 40 feet tall and low branching. Nuts larger than American, but not so sweet. (Pl. III.)

CASTANEA PUMILA × CRENATA. **Hybrid chestnut.** A hybrid between the American chinkapin and the Japanese chestnut. Produced by Dr. Walter Van Fleet, Chico, Cal. Good producer and strongly resistant to the chestnut bark disease. Nuts of fair quality, intermediate in size between the chinkapin and Japanese chestnut.

40035. CASTANEA sp. **Chestnut.** From F. N. Meyer, Huihsien, Kansu, China. A species of medium tall growth; trunk more slender, and bark smoother than in *C. mollissima*, also the leaves, burs, and nuts are smaller. Prefers well-shaded situations, and damp soil. Of value as a nut-bearing tree.

37900. CELTIS sp. A tree about 30 feet high and sometimes spreading in habit, related to our native hackberry, found growing on the river banks in Pirapora, Minas Geraes, Brazil. The small, orange-colored fruits, about one-fourth of an inch in diameter, are edible and eagerly sought after by boys.

CERATONIA SILIQUA. **Carob.** Evergreen tree, 20 feet high, with thick trunk and shining leathery leaves. The female trees produce dark-brown pods, about 4 to 10 inches in length, commonly known as St.-John's-bread; these are eaten for their sweetish pulp. They also form a very nutritious feed for cattle.

CHAENOMELES CATHAYENSIS. From F. N. Meyer, China. A shrub or small tree, the fruits of which are prized for their strong, pleasant aroma. Used in China for perfuming rooms; also for preserves. Leaves turn rich scarlet in the fall. Probably not hardy north of Philadelphia, except in sheltered locations. Known also as *Cydonia cathayensis*.

40550. CHAETOSPERMUM GLUTINOSUM. From William S. Lyon, Manila, Philippine Islands. A Philippine tree allied to Citrus, and recommended for trial in semiarid regions as a stock for the cultivated citrus fruits. Occurs on gravelly hillsides almost devoid of rainfall during seven months of the year. It is probably susceptible to frost.

CHALCAS EXOTICA. **Orange jessamine.** One of the most attractive of evergreen shrubs for formal plantings in gardens and dooryards. Its rounded outline, glossy, dark-green foliage, panicles of white, bell-shaped, fragrant flowers, followed by small red berries, have made it a general favorite in southern Europe for outdoor and greenhouse use. Hardy in Florida. Also known as *Murraya exotica.*

CHAYOTA EDULIS. **Chayote** or **mirliton.** Perennial, rampant, climbing cucurbit, bearing annual crops of green or white pear-shaped fruits, more delicate in flavor than squash. Excellent creamed, stewed, as salad, or baked with meats. Good shipper. A promising truck crop on well-drained, fertile, sandy-loam soils. Fruits prolifically in Florida, southern California, and around New Orleans.

CHENOPODIUM QUINOA. Tall annual, largely cultivated on the dry slopes of the Andes for its nutritious but acrid seeds used in soups or prepared similar to rice in several changes of water. Recommended for trial as a substitute for spinach, for which purpose its leaves have long been used in France during the hot off season for this vegetable. Its culture is similar to mustard.

42202. CHILOPSIS LINEARIS. **Mimbres.** Collected by Dr. David Griffiths of the Bureau of Plant Industry. Handsome flowering tree related to the catalpa, which it resembles only in its smaller purple-tinged flowers. Its leaves, however, are willowlike. The tree is quite open in habit, but it stands pruning and can be easily shaped as desired. Native from western Texas to California and southward.

CHIONANTHUS RETUSA. **Chinese fringe tree.** One of the most attractive and distinguished of hardy deciduous shrubs. Somewhat resembles the American fringe tree (*C. virginiana*), but has the abundant shorter and broader panicles erect, and flowers on the young shoots of the year. Flowers snow white; the corolla having four strap-shaped petals three-fourths of an inch long. The whole shrub is usually a mass of bloom in June and July.

42292. CHORISIA INSIGNIS. **Palo borracho.** Presented by Señor Benito J. Carrasco, Buenos Aires, Argentina. Ornamental flowering tree with a very thick trunk, related to the "silk floss tree" which is cultivated in southern California. Flowers yellowish, striped with brown, about the size of those of the flowering dogwood (*Cornus florida*). Native of northern Argentina.

CHRYSOPHYLLUM CAINITO. **Star-apple.** Tropical American fruit and ornamental tree. Evergreen, up to 50 feet high; with beautiful, broad, green leaves, golden yellow and silky on the under surface. Fruit the size of an apple, with star-shaped core and purple to white skin and flesh. The pulp is said to be delicious if the fruit is left on the tree until ripe. Will not stand frost.

CICER ARIETINUM. **Chick-pea,** *Garbanzo.* Drought-resistant varieties of this legume are recommended for dry-farming regions and as rotation crops with wheat. Culture similar to English bush peas, and the yield of seeds is about 12 bushels per acre. The small pods contain one or two seeds, eaten roasted like salted peanuts, boiled or baked like navy beans, or ground into flour.

CITRULLUS VULGARIS. **Watermelon.** Melon seeds, even from excellent fruits, are so apt to give disappointing results, either through having been cross-pollinated or because of the new environment, that descriptions of them are likely to be misleading. Seeds from Chinese, Roumanian, Siberian, and Caucasian sources are on hand and will be supplied to experimenters under name and number on request.

37877. CIPURA PALUDOSA. From Dorsett, Shamel, and Popenoe, Sao Joao del Rey, Minas Geraes, Brazil. A beautiful plant of the iris family, growing along river banks. Grasslike leaves, 12 to 15 inches high. Flowers less than 1 inch across, of most delicate light-blue color. Worthy of trial as a border plant in warm climates and for forcing.

CITRUS AURANTIUM. From Dorsett, Shamel, and Popenoe, Bahia, Brazil. *Laranja da terra* or **bitter orange,** the chief species used in Brazil as a stock for the navel orange and other cultivated citrus fruits. Probably the same as the sour orange of Florida, but worthy of trial for possible differences.

37804. CITRUS GRANDIS. **Grape fruit.** From Surinam, through James B. Rorer. The **Alamoen,** apparently a native of Surinam, comes true to seed. Fruits irregular, flattened, with rather thick rind, but with a lusciousness of meat not surpassed by any commercial sort. Practically no rag, and it does not squirt when eaten with a spoon. The melting character of its flesh is quite remarkable.

CITRUS HYSTRIX. From P. J. Wester, Lamao, Bataan, Philippine Islands. A thorny tree, 20 to 40 feet high, with broad-bladed leaves 6 to 10 inches long. The smooth, greenish lemon-colored fruits are aromatic, juicy, and sharply acid, making a fair ade, and are often used for cleaning clothes. For trial as a citrus stock.

23028. CITRUS LIMONIA. **Lemon.** From F. N. Meyer, Fengtai, China. Dwarf, ornamental lemon, cultivated by the Chinese as a decorative plant in the winter. Small pot plants are frequently observed with a dozen large lemons on their branches. Readily propagated from cuttings. For testing as an ornamental and for breeding experiments in this country.

CITRUS MEDICA. **Citron.** Shrub or small tree, with long, irregular branches that root wherever they touch the ground. Flowers large with the petals white above, reddish purple below. Fruits large, 6 to 10 inches by 4 to 6 inches. The candied peel is much used in confectionery and cakes. Very sensitive to cold.

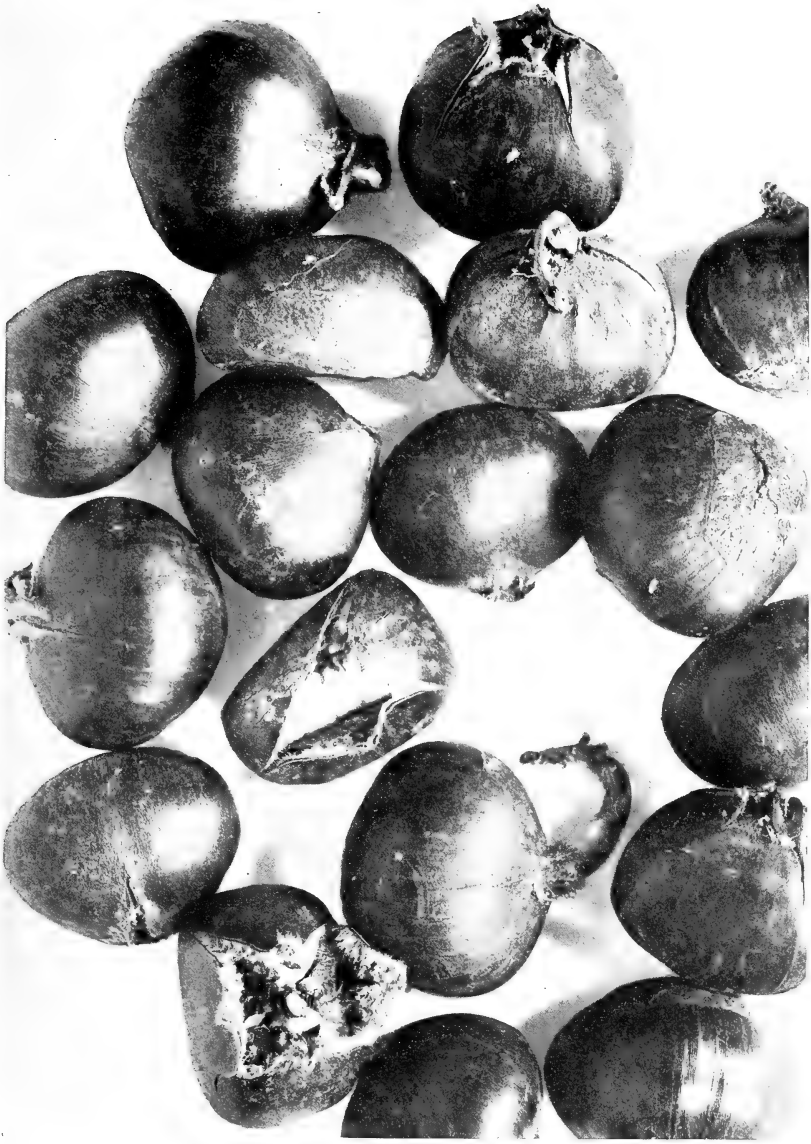
CITRUS SINENSIS. From Dorsett, Shamel, and Popenoe, Bahia, Brazil. **Navel orange,** from the native home of this fruit. Selected types from trees of superior productiveness and fruits of excellent quality. Introduced for trial in orange-growing districts in comparison with types of navel oranges now under cultivation.

38708. CLAUCENA LANSIUM. **Wampee.** From Honolulu, Hawaii, through E. V. Wilcox. Seedlings from the place of A. J. Campbell. Low, spineless, very odorous tree, related to citrus, upon which it can be grafted. Fruit the size of gooseberries, pubescent, with balsamic fragrance; rather a condiment than a dessert fruit. Grows well in Florida. Should be tested as a stock for Citrus.

22620. CLEMATIS RECTA MANDSHURICA. From F. N. Meyer, Shinglungshan, China. Herbaceous perennial, 2 to 3 feet high, with erect stems terminating in panicles of large white flowers. For testing as an ornamental or as a cut-flower plant.

42688. × CLEMATIS VEDRARIENSIS. A beautiful hybrid Clematis, 16 to 20 feet high, from Vilmorin-Andrieux & Co., Paris, France. Obtained by crossing *C. chrysocoma* and *C. montana rubens.* The hybrid has preserved the beautiful rose color (though slightly paler) of the latter; but has much larger flowers (up to 2¾ inches across), and is more vigorous and more branching. Blooms in late spring and early summer.

40704. CLEMATIS sp. From F. N. Meyer, near Tanchang, Kansu, China. A bushy species with yellow flowers, found amidst dry rocky débris at 5,000 to 7,000 feet altitude. For trial as a border shrub in dry regions.



THE CHINESE DOWNY CHESTNUT (CASTANEA MOLLISSIMA).

The Chinese downy chestnut, so called because of the downy character of the young foliage, has proved highly resistant to the bark disease (Endothia). Orchards of the large-fruited variety illustrated exist near Sianfu. It is a good sweet chestnut and is worth growing for its nuts alone. It does not form a large tree and has no value for lumber. Collected by Mr. Frank N. Meyer. Photographed (P13809FS) March 19, 1914. (Natural size.)

FRUITS OF THE EDIBLE CHINESE HAWTHORN (CRATAEGUS PINNATIFIDA).

The Chinese coat these bright red fruits, while fresh, with molten sugar and also make them into delicious preserves or a stiff jelly which has a characteristic flavor. The trees, of which there are whole orchards in China, are very hardy and extremely productive. This variety is from Huihsien, Honan. Photographed by Mr. Frank N. Meyer (P13071FS) at Kaifengfu, Honan, China, March 4, 1914. (Natural size.)

40066. CLETHRA BARBINERVIS. From Japan, through E. H. Wilson. A deciduous shrub of the heath family, up to 6 feet high. Leaves often clustered at the end of the twigs, oval or obovate, 2 to 5 inches long. Flowers white, produced from July to September, in a rather compact terminal panicle 4 to 6 inches long, covered with white, starry down. Not so hardy as our native *C. alnifolia.*

COCOS CORONATA. **Nicurí palm.** Collected by Dorsett, Shamel, and Popenoe, Bahia, Brazil. A palm 20 to 30 feet high, usually presenting a somewhat straggly appearance due to the leaves being whipped and torn by the wind. The old leaf bases adhere to the trunk; and, being arranged spirally, give it a curiously twisted appearance. The leaves are glaucous and graceful when not torn.

COLOCASIA ESCULENTA. **Dasheen.** From various West Indian and East Indian sources. Large-leaved aroid, related to the taro and the elephant ear, producing numerous small tubers around a large central one. These, when cooked, are as palatable as potatoes, richer in protein, and with a nutty flavor. Twenty-five hundred people are growing them in the South.

37866. COPERNICIA CERIFERA. **Carnauba palm.** From Joazeiro, Bahia, Brazil. Through Dorsett, Shamel, and Popenoe. Forms large groves along river banks. Wax exuding from cut leaves, dried in the sun, once formed the basis of an important industry. The fruits are so highly valued for hog feed that owners of groves are protecting them. The tree is probably a slow grower; a single one yields a bushel of fruits.

40988. CORDIA ALBA. **Ateje.** From Wilson Popenoe, Trinidad, Cuba. A large, bushy shrub, 15 feet high, branching close to the ground, sending up long, stiff shoots well furnished with dark-green foliage. The flowers, which are pale yellow, about one-half inch across, are borne in broad, flat-topped corymbs sometimes a foot across. This is apparently a good honey plant and of considerable ornamental value.

37224. CORDIA OBLIQUA. From Dr. L. Trabut, Algiers. A medium-sized tree, 40 to 50 feet high, native of India, where it is found at an altitude of 5,000 feet. Its wood is used in boat building, in the making of agricultural implements, and as fuel. The tree is vigorous in its growth and forms a handsome rounded crown with dense bright green foliage.

42759. CORNUS PAUCINERVIS. A Chinese **cornel.** Presented by John Dunbar, Rochester, N. Y. Shrub 5 or 6 feet tall, with erect stems; small narrow-pointed leaves with only two to three pairs of prominent veins; numerous small clusters of white flowers and black fruits. Valuable as a midsummer flowering bush. Native of western Hupeh and western Szechwan, China.

22471. CORYLUS AVELLANA. **Filbert,** *Bysance.* From Mrs. Felix Gillet, Nevada City, Cal. The strongest and most vigorous grower of all the filberts. Differs considerably from the others in leaf characters and in possessing a rather corky bark. Valuable as grafting stock. Originally imported by Felix Gillet from the Mediterranean region.

22472. CORYLUS AVELLANA. **Filbert,** *D'Alger.* From Mrs. Felix Gillet, Nevada City, Cal. Tree of the *Barcelona* type, bearing somewhat smaller nuts of similar flavor, but said to outbear the better known variety. Has been grown successfully in the State of Washington. First introduced by Felix Gillet from the Mediterranean region.

22476. CORYLUS AVELLANA. **Filbert,** *Avelline Grosse Ronde.* From Mrs. Felix Gillet, Nevada City, Cal. Medium-sized tree, producing fair-sized, symmetrical, wedge-shaped nuts, which are cherry red at the shoulder, with a gray covering that becomes more dense toward the apex. Originally introduced from France by Felix Gillet.

22480. CORYLUS AVELLANA. **Filbert,** *Montebello.* From Mrs. Felix Gillet, Nevada City, Cal. Tree resembling the *Barcelona,* with smaller, more regular, rather long nuts and long husks. Reported to outbear the *Barcelona.* Said to have been originally imported from Sicily by the Bureau of Plant Industry.

22484. CORYLUS AVELLANA. **Filbert,** var. *Grosse Blanc* of England. From Mrs. Felix Gillet, Nevada City, Cal. Large, vigorous tree similar to the well-known *Barcelona.* Good producer, reported as bearing the largest nuts in the smallest clusters of any of the filberts cultivated in Oregon. Originally introduced by Felix Gillet.

22485. CORYLUS AVELLANA. **Filbert.** From Mrs. Felix Gillet, Nevada City, Cal. A medium-large French variety called the *Daviana.* Introduced by Felix Gillet, who for many years contributed much to the literature on hazelnut culture in this country.

22486. CORYLUS AVELLANA. **Filbert,** *Barcelona.* From Mrs. Felix Gillet, Nevada City, Cal. Tree of upright medium growth. Good producer. Blooms about the first week in January in Oregon. The husk is short hispid; the nut large, ovate, slightly compressed; shell moderately thick and rather hard but well filled by the kernel, which is of very good quality.

33234. CORYLUS AVELLANA. **Filbert,** *Rouge Ronde.* From Pedro Giraud, Granada, Spain. A red-kerneled variety not well known, but seemingly very similar to the *Barcelona* and *Avellıne* varieties.

35689. CORYPHA ELATA. **Palm.** From Manila, P. I., through O. W. Barrett. Large tropical fan palm related to the famous Talipot palm of Ceylon. Grows 70 feet tall, and then produces immense bloom and dies. Leaves of very large size, used for fans, etc. A very decorative palm for regions like Panama, Porto Rico, and possibly the Isle of Pines. Coryphas do poorly in Florida.

COTONEASTER spp. Ornamental shrubs used extensively in small gardens, for training against walls and over rocks, and for plantings near stone steps, etc., because of their attractive foliage, white flowers, picturesque form, and especially because of the masses of red, yellow, brown, or black fruits which they bear.

CRATAEGUS PINNATIFIDA. Large-fruited **Chinese hawthorn.** From F. N. Meyer. Dense low-branching, well-rounded tree of 20-foot spread; ornamental in spring and fall. Cultivated in orchards by the Chinese, who make delicious jelly similar to crabapple jelly from the bright scarlet fruits. Probably very hardy. Deserves trial along with native large-fruited American species. On *C. arnoldiana.* (Pl. IV.)

37011. CROTALARIA MESOPONTICA. From A. Stolz, Kyimbila, German East Africa. A dense, bushy legume, which grows very quickly and forms a cushion 2 to 3 feet in diameter. The pendulous racemes of bright yellow flowers, striped with brown are 3 to 4 inches long. Should do well in Florida.

36969. CROTALARIA sp. From Bahia, Brazil, collected by Dorsett, Shamel, and Popenoe. A leguminous, shrubby plant with succulent stems; found self-sown in the orange orchards of Brazil. Said to be particularly suited to dry, semiarid lands. Try as cover crop in California. Root development extensive, nodules abundant; would decompose rapidly if plowed under at the right time.

CRYPTOSTEGIA GRANDIFLORA. Rubber-producing vine, native of Madagascar, but already naturalized on the Everglades and Keys of Florida. The vine is too rank to be especially beautiful. Flowers large and attractive. If method of extracting rubber were devised, might have commercial importance, as the rubber is of good quality. Fibers attached to seeds have been utilized for filling life preservers.

CUCUMIS MELO. **Muskmelon** or **Cantaloupe.** Varieties of muskmelon more or less accurately described have been received from many countries, and selections of these will be sent for trial to applicants having facilities for experimenting with them.

40203. CUCUMIS SATIVUS. **Cucumber.** A variety furnished by A. C. Hartless of Seharunpur, India, to the Philippine Bureau of Agriculture. From trials conducted by Wester at Lamao it appears to be very resistant to various tropical cucumber diseases. The good size of its fruit and their fair quality have led the Philippine authorities to grow seed for general distribution throughout the islands. Has been named the *India*.

CUCURBITA PEPO. **Japanese squash.** Known as Cherimen. Nearly round, somewhat flattened, orange-red, deeply scalloped; weight about 5 to 8 pounds. Flesh bright yellow, of excellent quality, and said to have better flavor than the *Hubbard*. Keeps well. Requires culture similar to that given ordinary varieties.

40618. CUDRANIA JAVANENSIS. Evergreen, spiny shrub with edible fruits. Presented by the Bureau of Productive Industry, Taihoku, Formosa. Of somewhat vinelike or trailing habit, with reddish brown drooping branchlets, small leaves, and rather inconspicuous flowers. Male and female flowers on different plants. Fruits 2 to 3 inches in diameter, green to reddish yellow, sweet. Eaten fresh or preserved in sugar. Tender.

34493. CUDRANIA TRICUSPIDATA. **Che** or **Tcho Sang.** From central China, collected by E. H. Wilson. Close relative of Osage orange, with which a very vigorous hybrid has been made in France. Leaves considered superior to mulberry for silkworms, making finer silk. Fruits pink, size of large plums; edible, sweet, but without much character. Has fruited in Georgia.

41690. CUPRESSUS GLABRA. **Smooth cypress.** From J. F. Derrick, Sedona, Ariz. Tree 25 to 30 feet high, with thin, smooth, dark purple-red bark; bright blue-green, glaucous foliage; and small spherical cones. Resembles *C. arizonica* Greene, but is more compact.

33213 and 33214. CYDONIA OBLONGA. **Quince.** From Pedro Giraud, Granada, Spain. *Antequera*, oblong variety, smooth and well formed, with fine, mellow flesh, considered the best of all varieties of quinces. Spanish quinces are famous for their high quality and the best are said to come from Antequera.

CYPHOMANDRA BETACEA. **Tree tomato.** Large-leaved, half-woody plant, often the size of a small tree, cultivated for its orange or reddish egg-shaped fruits, the flesh of which is firm and sweetish, somewhat resembling a tomato in taste and texture. Reported excellent for fruit salads or preserves. Can be fruited in greenhouse; possibly even outside, south of Atlanta, Ga. Native of Brazil.

31905. CYTISUS SPACHIANUS. From G. V. Perez, Teneriffe, Canary Islands. A handsome, yellow-flowered "mountain broom" with a very sweet odor. It is used as a bee plant in Teneriffe, but is of considerable value as an ornamental.

34079. DECKENIA NOBILIS. From P. Rivaly Dupont, Seychelles Islands. A tall palm, often growing to a height of 120 feet in the Seychelles Islands. Recommended for lawn and avenue planting.

39964. DELONIX REGIA. **Royal Poinciana.** From C. F. Mead, Asuncion, Paraguay. Handsome, leguminous tree with broad top and wide-spreading branches, gracefully bipinnate leaves nearly 2 feet long, and long racemes of large scarlet flowers, the upper petals of which are striped with yellow. Grows rapidly; yields a yellowish or reddish brown gum containing oxalate of lime. Grown widely in the Tropics.

13132. DETARIUM SENEGALENSE. **Matondo.** From W. M. Longden, Melsetter, Rhodesia, South Africa. A fruit-bearing, leguminous tree, which grows 60 feet high. Attractive, spreading habit, suited for parks and avenues. Fruit about the size of an apricot; yellow, with tough, bitter peel; flesh reported jellylike, sweet, and pleasant; prolific bearer; 11-year-old tree in Miami not yet fruited.

40177. DEUTZIA LONGIFOLIA. From the Royal Botanical Gardens, Kew, England. A deciduous shrub, 4 to 6 feet high, distinguished from related species by the narrower leaves and the purplish rose flowers. It is one of the finest Chinese deutzias, with its large and richly tinted flowers. Collected by E. H. Wilson.

38696. DICTYOSPERMA ALBA. From G. Regnard, Port Louis, Mauritius. Var. rubra. **Palm** attaining a height of 50 feet. Leaves of young plants have dark-red margins that lose color as they grow older. The young plants with their equally pinnatisect, red-margined leaves, are very attractive and lend themselves readily to house and table decoration. The terminal bud or "cabbage" has a very delicate flavor.

DIOSPYROS EBENASTER. **Black sapote.** An interesting tropical plant belonging to the persimmon family. Tree of compact, shapely form with nearly oval glossy leaves 4 inches long. Fruits light green when ripe, with very dark brown, sweetish flesh, oblate, $2\frac{1}{2}$ to 3 or 4 inches in diameter. Crushed fruits served with orange juice are said to make a delicious dish. Types from cooler parts of Mexico may withstand some frost.

16921. DIOSPYROS KAKI. **Tamopan persimmon.** From F. N. Meyer, Ming Tombs Valley, near Peking, China. Fruit thick skinned, seedless (as grown in China), sometimes 4 inches in diameter, with characteristic furrow around it. In China uniformly non-astringent as soon as mellow but while still firm. In America often astringent for reasons not yet understood. May prove hardy as far north as Washington, D. C.

21910. DIOSPYROS KAKI. **Persimmon.** From F. N. Meyer, Pangshan, Chihli, China. Reported to be rare; fruit flat, of medium size, 2 to 3 inches in diameter; color orange-red; skin thin; quality good; a good keeper but not a good shipper.

22350. DIOSPYROS KAKI. **Persimmon.** From F. N. Meyer, Shifengtse Temple, west of Peking, China. Apparently a larger fruited variety of the valuable flat, seedless Tamopan persimmon previously introduced (S. P. I. 16921). As the trees were growing in a very well-sheltered valley, this large-fruiting quality may be due to the location. Chinese name *Ta shi tse.*

22365. DIOSPYROS KAKI. **Persimmon.** From F. N. Meyer, Taijatsoa, west of Pautingfu, Chihli, China. A large, very flat persimmon of orange-red color, found growing in great orchards in the mountain valleys.

22367. DIOSPYROS KAKI. **Persimmon.** From F. N. Meyer, Taijatsoa, Chihli, China. Small-fruited seedless persimmon, not quite flat, bearing an equatorial suture and two transverse sutures. These vary greatly in different fruits. The tree grows much larger than the ordinary flat-fruited varieties. Local Chinese name, *Lien hua shi tse,* or "lotus-flower persimmon."

26902. DIOSPYROS KAKI. **Persimmon.** From Rev. A. O. Loosely, Tientai, China. Reported to be a delicious persimmon, about the size and shape of a large egg. It has a bearing season of about two months and is said to be very prolific.

DIOSPYROS LOTUS. Compact-growing tree, 20 to 50 feet high, with oblong pubescent, sometimes glabrous, leaves and reddish, white, or yellow flowers. The edible, globular fruits are brown or black when ripe and less than 1 inch in diameter. Extremely drought and heat resistant and useful as stocks for improved, large-fruited varieties of persimmons, especially in dry, hot regions of this country.

40891. DIOSPYROS MONTANA. From William Bembower, Lal Bagh, Bangalore, India. A small, erect, deciduous tree up to 30 feet high, often with spines on trunk and larger branches. Bees are said to be very fond of the flowers. Fruit 1½ inches in diameter. It is quite ornamental and useful where small trees are desirable, but not hardy.

40178. DIPELTA VENTRICOSA. Ornamental flowering shrub from western China, discovered by E. H. Wilson. Differs from *D. floribunda* (which resembles the Weigela) in having smaller belled corolla. Flowers rose colored. Shrub 6 to 15 feet high. Hardy in England.

DOLICHOLUS PHASEOLOIDES. High-climbing ornamental leguminous plant from the West Indies and northern South America. Stems twining. Flowers pealike, yellow, with purple-striped standard borne in numerous axillary racemes. The small black and scarlet or black and yellow seeds are often strung as beads; they are also said to be used medicinally. Can be cultivated out of doors only in the southernmost parts of the United States.

DOLICHOS LABLAB. **Hyacinth bean.** A form procured by F. N. Meyer in China.. Ornamental vine, chiefly valuable for its masses of pink flowers which appear late in the fall. Stems twining; leaves composed of three rather broad leaflets; flowers somewhat resembling sweet peas, but clustered in a dense spike. Often cultivated in the Tropics for the edible pods.

36757. DUCHESNEA FILIPENDULA. Collected by F. N. Meyer near Hsiao Wutaishan, Chihli, China. Wild plant closely related to the strawberries (*Fragaria* spp.), found on the northern slopes of mountains and in alpine meadows at 6,000 to 9,000 feet altitude. Fruit fairly large, carmine red, slightly elongated. Said to be of delicious flavor. Possibly of value in hybridization experiments.

ELAEAGNUS ANGUSTIFOLIA. **Oleaster.** Very ornamental deciduous shrub or small tree, from western Asia, with narrow, willowlike leaves and small, fragrant yellow flowers. The sweet, edible fruits are reddish brown and resemble slightly a small date.

ELAEIS GUINEENSIS. **African oil palm.** Vast numbers of this palm occur wild on the west coast of Africa and supply a great industry in palm oil. Seeds from the so-called "Sombo" variety have a small nut with thick meat and yield a large amount of oil.

40303. ELAEIS MELANOCOCCA. **Oil palm.** From O. F. Cook, Cristobal, Panama. Wide-spreading, low palm with short, thick, erect or slightly trailing trunk. Grows in low moist land close to the sea. Closely related to *Elaeis guineensis*, the African oil palm. Small quantities of oil are extracted from the kernels by the natives. Appears suitable for planting in Florida.

ELSHOLTZIA STAUNTONI. Late flowering plant belonging to the mint family. Collected by F. N. Meyer in Shensi, China. Semi-woody plant with opposite mint-scented leaves, dark green above, pale below; and large branched inflorescences composed of crowded clusters of small purplish pink flowers. Propagated easily by cuttings of the young growths. Rather weedy tendencies.

42765. ENGELHARDTIA ACERIFLORA. Presented by Dr. A. Robertson Proschowsky, Nice, France. Very tall ornamental tree related to the walnut, which it resembles somewhat in its foliage and its inconspicuous flowers arranged in pendent spikes. These are succeeded by little pea-shaped fruits seated on the base of 3-lobed, beautifully veined and colored bracts which are often more than a foot long and hang gracefully among the leaves. Native of the Himalayas.

ENTEROLOBIUM CYCLOCARPUM. A fine, leguminous tree, extensively used in Cuba as a shade tree for avenues. The tree grows to a considerable height, forming a symmetrical, rounded head, which, with deep-green foliage, gives a fairly dense shade and presents a very attractive appearance. The wood is said to be insect proof and is in demand for making boxes and trunks.

EREMOCITRUS GLAUCA. **Australian desert kumquat.** Drought resistant, evergreen shrub or small tree, having small, leathery leaves and irregularly formed fruits about half an inch in diameter, with sweetish, edible peel. The fruits are preserved, or the acid juice is used for making an agreeable, refreshing drink. Probably the hardiest of all evergreen citrus fruits.

41685. ERIANTHUS RUFIPILUS. From C. C. Calder, Royal Botanic Garden, Sibpur, near Calcutta, India. Perennial ornamental grass with stems 6 to 8 feet high; leaves 2 to 3 feet long, one-fourth to 1 inch wide, and gray-white or purple-tinged; panicles 8 to 18 inches long, the spikelets concealed by dense white hairs.

ERIOBOTRYA JAPONICA. **Loquat.** A medium-sized symmetrical tree with handsome leaves, wooly-white beneath. Native of China and Japan, cultivated throughout the Gulf States and California. The fruit is small, oval, and yellow, and resembles a small pear in shape, with a sweetish acid flavor. Requires light rich soil with good drainage. Special grafted varieties with large fruits will be sent.

31819. ERUCA SATIVA. Received through F. N. Meyer, Oasis of Sandju, Chinese Turkestan. "Sa-un," a variety of seed, the oil of which is used both for culinary and illuminating purposes. To be tested as a possible crop for the intermountain regions.

31820. ERUCA SATIVA. From F. N. Meyer, Karawag, Chinese Turkestan. The seeds yield an oil which is used both for culinary and illuminating purposes. The acrid leaves are said to be used in salads in southern Europe. Grown as a field crop in the more elevated portions of Turkestan. Deserves to be experimented with at high altitudes in the Rocky Mountain region.

39740. ERYTHEA EDULIS. **Palm.** From W. H. Morse, Santa Barbara, Cal., through O. F. Cook. This is one of the finest of the American palms. Found only in a wild state on the Island of Guadaloupe.

ERYTHRINA ARBORESCENS. **Coral tree.** From Darjiling, India. Most conspicuous flowering tree in Darjiling. Leaves persist while tree is still in flower; do not fall and leave branches bare. Brilliant scarlet spikes a foot long, resembling Royal poinciana. Wood durable, though light and somewhat open grained; does not warp or split; takes a good varnish. Used for trays, etc.

42204. ERYTHRINA FLABELLIFORMIS. **Coral bean.** Collected by Dr. David Griffiths of the Bureau of Plant Industry. A low, spiny, deciduous shrub 2 to 4 feet high, inhabiting the upper foothills of the isolated mountain ranges of the Southwest. Its beans range from cream through yellowish or coffee color to bright scarlet, and will fill the same rôle that the smaller coral beans do which are now grown. Probably more hardy than the introduced species.

ERYTHRINA VESPERTILIO. **Bat's-wing coral.** Small, ornamental, leguminous tree, 30 to 40 feet high. Sometimes cultivated as a shrub in warm houses for its showy racemes of red flowers and long pods with large red seeds, resembling the better-known coral beans (*Erythrina* spp.). Native of Australia, where the aborigines use the exceedingly light spongy wood for making their hielamans, or shields.

41324. ESCALLONIA sp. From O. F. Cook, Pinasniocj, Peru. A fine-leafed tree, comparable to boxwood in foliage, but with more open habit of growth, often giving an effect like some of the dwarf Chinese evergreens. Foliage is dark, shiny green. The tree endures cutting back to any extent. Propagated by cutting and layering. May thrive well along California coast, and might become popular as a hedge plant or as an ornamental when space is limited.

38713. EUCALYPTUS CLADOCALYX. From Angeles National Forest, Cal. Presented by the Forest Service. A symmetrical, erect Australian eucalypt, ranging in height from 50 to 100 feet. The trunk is continually left smooth by the flaking off of the outer bark. Timber very durable under ground and suitable for posts, railway ties, etc.

38725. EUCALYPTUS LONGIROSTRIS. From United States Forest Service, Angeles National Forest, Cal. A red gum. A leading forest tree of Australia, with variable habit, but up to 100 feet in height, with trunk diameter said to reach 12 feet. The timber is considered very valuable by the Australians; in America, used for posts and fuel largely. The wood is a rich red color when freshly cut, growing darker on exposure to the air. It is also a good honey-yielding tree. Prefers river bottoms.

38722. EUCALYPTUS POLYANTHEMOS. From United States Forest Service, Angeles National Forest, Cal. A handsome shade tree of medium size, spreading habit, and slow growth. It thrives under a great variety of climatic conditions. The timber is very hard, strong, and durable, highly valued in Australia for railroad ties, cogs, and parts of wheels. It also makes an excellent fuel, and can be used satisfactorily for windbreaks.

EUCOMMIA ULMOIDES. Deciduous tree, closely related to the Hamamelidaceæ (witch-hazel family), with leaves and bark containing a remarkable substance resembling rubber, which is being investigated to ascertain its possible economic value. In habit and foliage it somewhat resembles an elm. Hardy as far north as Boston. Recommended as an interesting park tree.

41651. EUGENIA DOMBEYI. **Grumichama.** From H. M. Curran, Brazil. Ornamental shrub or small tree with edible fruits, which have an agreeable, sweet flavor, are used in preserves, and in the preparation of fermented beverage. The wood is used in carpentry and cabinetmaking. The small aromatic and astringent leaves are said to be used medicinally.

18566. EUONYMUS JAPONICUS. Collected by F. N. Meyer, near Hangchow, Chekiang, China. A decumbent evergreen Euonymus, with large dark-green leaves. Of value in the mild-wintered sections of the United States as an ornamental plant to clothe trunks of large trees and as a cover for stone and brick walls facing north or east.

40698. EUONYMUS NANUS. From F. N. Meyer, Taochow, Kansu, China. A small species of **spindle wood** of decumbent habit, found in shady places amongst scrub and moss, at altitudes of 7,000 to 9,000 feet. Leaves small, lanceolate, apparently evergreen. The scarlet-coated seeds hang gracefully from the large fruits. Of value as a rockery plant for cold regions.

EUONYMUS PATENS. Spreading shrub (to 10 feet in height), with handsome foliage often remaining on the branches throughout mild winters. Abundant late-ripening fruits pink with orange seeds. This shrub is closely allied to *E. japonicus,* but differs notably in the thinner semievergreen leaves. Hardy as far north as New York and in sheltered places in Massachusetts.

40581. EUONYMUS RADICANS ACUTUS. From Vicary Gibbs, Elstree, Herts, England. A euonymus from western China, which resembles *E. radicans,* but is easily distinguished by its large, thinner leaves, which are distinctly veined beneath. The plant lies flat on the ground, forming a mat of green. Suitable for planting under trees. Hardy.

38237. EUONYMUS sp. From F. N. Meyer, Tchangpai, Shensi, China. Shrub, or, when not molested, small to medium-sized tree. It is an excellent bank binder and withstands drought to a remarkable extent. Also able to withstand some alkali. Under cutting it seems to spread rapidly. Deserves trial as a bank and soil-binding plant in the semiarid sections of the United States.

40719. EVODIA RUTAECARPA. From F. N. Meyer, near Tchanlienli, Shensi, China. Medium-sized tree with handsome pinnate leaves, bearing large umbels of whitish flowers followed by bunches of dark red fruits. Found in somewhat stony places. For trial as an ornamental tree in sections of the United States where the winters are mild.

EXOCHORDA RACEMOSA. A very beautiful Chinese shrub (up to 10 feet high) of rounded, bushy habit; with narrowly obovate leaves and extremely numerous racemes of pure white flowers 1¼ to 1½ inches across. Should be thinned out after flowering to obtain best results. Will stand considerable drought, and should be tried as an ornamental for rockeries and for the semiarid sections of the United States.

41438. FICUS BENJAMINA. **Weeping fig.** From J. A. Hamilton, Kamerunga, Australia. Evergreen shade tree with small, thin, evergreen leaves, reported to make "a majestic shade tree, with its dark-green foliage." It is also said to stand the dust and heat of the streets better than any other tree in the Bahamas.

33104. FICUS RUBIGINOSA. From Sydney, New South Wales. Presented by Prof. J. H. Maiden. A fig tree forming a dense shade and growing in frost-free regions to a height of 60 to 80 feet and a diameter of 4 to 5 feet. Timber soft and brittle. Foliage will probably furnish food for cattle.

36020. FICUS SAEMOCARPA. From F. W. Popenoe, Seharunpur, India. Evergreen shrub with glossy, deep green leaves 3 to 9 inches long, and inconspicuous flowers. Native of northeastern and eastern India. Considered of value as an ornamental shrub in the Southern States; probably tender.

FICUS SYCOMORUS. **Egyptian fig.** The sycamore of Scripture. Planted in arid, nearly frostless regions for its hard wood and small edible fruits, resembling figs, which it produces in great quantities. Three crops per year are produced. Boys with special thimbles ending in a sharp blade cut off the top of each fruit, after which it sweetens. Hogs are extremely fond of them.

35449. FICUS ULMIFOLIA. **Fig.** From C. F. Baker, Los Banos, P. I. Very good edible Philippine fig, especially adapted for moist, hot regions. Fruits sweet and palatable, axillary, nearly all solitary with short stems, globose, hairy, or hispid in young state, eye half open and scaly.

13138. FICUS sp. **Rhodesian fig tree.** From W. M. Longden, Melsetter, Rhodesia. Remarkable avenue tree. Trunk and large branches golden yellow, with thin, papery bark, leaves large, deep-green, making striking contrast. Does not produce aerial roots and can be planted 50 feet apart. Rapid grower. Fruit dry, inedible. (Pl. V.)

37004. FORSYTHIA SUSPENSA. **Golden Bell.** From Pekin, China; collected by F. N. Meyer. This variety is said to have flowers larger than the kind commonly grown. It is very resistant to drought and able to stand a fair amount of alkali in the soil. Should prove of especial value as an ornamental in the drier sections of the United States.

37477. FORSYTHIA SUSPENSA. **Golden Bell.** Collected in the Province of Shansi, China, by F. N. Meyer. This variety was found growing in dry rocky places, at an altitude of more than 5,000 feet. Should prove well adapted to the drier regions of the United States.

FRAXINUS FLORIBUNDA. **Nepal ash.** Handsome Himalayan tree up to 120 feet high. Valuable as an avenue tree and for its timber, which is said to be much sought after for oars, plows, etc. Much resembles large-leaved forms of the Manna ash (*F. ornus*). Flowers white, in large terminal panicles. Trunk said to attain a diameter of 15 feet. Reported "half hardy" at Kew, England.

GARCINIA MULTIFLORA. Chinese bush related to the Mangosteen (*G. mangostana*). The fruits are said to be entirely wholesome and to possess a pleasant subacid taste something like an orange. Introduced for trial as a stock for the mangosteen.

36497. GARCINIA OBLONGIFOLIA. From William J. Tutcher, Hongkong, China. A tree related to the famous mangosteen, which, because of its habitat in a subtropical, much cooler climate than that to which the mangosteen is supposed to be confined, may prove suitable as a stock for the latter in Hawaii, Porto Rico, or even Florida. Apparently indigenous to the island of Hongkong.

GARCINIA TINCTORIA. Medium-sized evergreen tree from the East Indies. Foliage glossy, handsome. Fruit edible, eaten fresh or dried, and used in medicine. Bark used to prepare bright yellow dye. The tree yields an inferior grade of gamboge. Of interest in connection with mangosteen breeding in tropical America.

GLEDITSIA CASPICA. **Honey locust.** From F. N. Meyer, Nikita, Crimea. Tall, ornamental, deciduous tree, with occasional branched spines on trunk and branches. Foliage light green, turning to clear yellow toward fall. Flowers greenish and insignificant, but the large flat pods are highly ornamental. For testing as a shade tree.

GLEDITSIA SINENSIS. **Soap bean.** From China. Leguminous tree to 40 feet in height. Leaves 5 to 7 inches long, 8 to 18 foliolate, yellowish green, dull above. Pods contain saponin, used by Chinese for soap to wash hair and certain fabrics. Tree forms beautiful well-rounded heads. Strongly drought and somewhat alkali resistant. An ornamental shade or park tree for mild-wintered semiarid regions.

41652. HIBISCUS BIFURCATUS. **Mallow.** From H. M. Curran, Bahia, Brazil. A climbing shrub (or almost a vine) found in clearings along river banks where its great masses of showy pink flowers render it very attractive. Climbs 15 to 20 feet and the slender branches may be trained over porches or arbors. Very profuse and continual bloomer.

42832. HIBISCUS LUNARIFOLIUS. **Mallow.** Presented by the director, Department of Colonization, Asmara, Eritrea, Africa. An undershrub with roundish or sometimes slightly 3 to 5 lobed long-stalked leaves and terminal flower clusters of large yellow flowers 2 to 3 inches across. Related to the "swamp mallows" (*Hibiscus* spp.). Possibly of value as an ornamental in the South.

HIBISCUS SABDARIFFA. **Roselle** or **Jamaica sorrel.** Biennial, 3 to 5 feet high, commonly cultivated in warm countries. Produces an abundance of large, bright-red calyces in autumn. These, as well as the young leaves, by many are considered superior to cranberries for sauce and jelly making. Very ornamental when in bloom and in fruit. Sensitive to frost.

HOMOIOCELTIS ASPERA. A Japanese ornamental tree, up to 60 feet high, having the appearance of a hackberry (*Celtis* spp.), with the slender branches forming a dense head, rather inconspicuous, greenish flowers and small black drupes. Cultivated for its foliage and sometimes planted as a shade tree. Not hardy north of Georgia.

HOVENIA DULCIS. **Raisin tree.** A deciduous, ornamental tree, 40 to 60 feet high, with attractive, dark-green foliage, native of China. Fruits about the size of a small pea are seated on the ends of fleshy fruit stalks, which are extremely sweet, resembling raisins in flavor. They are used in wine making in Algeria and in China are eaten after a feast to counteract the effects of alcohol.

38565. HYMENAEA COURBARIL. From O. F. Cook, Guatemala City, Guatemala. Handsome tree with curious compound leaves consisting of two leaflets. Similar to Bauhinia but leaflets not united. The thick woody shells of the large pods contain a resin said to be used in the manufacture of varnish. Seeds packed in a thick layer of grayish powdery substance tasting like licorice root, commonly eaten and often sold in the markets.

HYPERICUM PATULUM. **St.-John's-wort.** An evergreen spreading shrub, 1½ to 3 feet high, with many smooth purplish two-edged branches, nearly ovate leaves, 1½ to 2 inches long, and large numbers of bright golden yellow flowers about 2 inches across, with many long stamens borne singly or in terminal clusters. A native of Japan, China, and the northern part of India. A semihardy ornamental.

39668. ILEX INTRICATA. **Holly.** From the superintendent of the Royal Botanic Garden, Sibpur, India. Low, rigid, straggling shrub; forming matted mass of interlaced, woody branches. The spreading, thick, leathery, bright-green leaves are narrowed into very short leafstalks. The very small, white flowers and the globose red fruits form its chief attractions.

INCARVILLEA SINENSIS. **Chinese trumpet flower.** Ornamental perennial with trumpet-shaped flowers, belonging to the Bignonia family. Large flowers are scarlet to bright crimson or reddish purple. One form has pale yellow blossoms. Said to be best grown as an annual or biennial from seed in the summer. Tender. Must be wintered under glass.

40183. INDIGOFERA GERARDIANA. From the Royal Botanical Gardens, Kew, England. Deciduous leguminous shrub, native of the Himalayas. Leaves odd-pinnate, with 13 to 21 leaflets three-eighths to five-eighths of an inch long, with gray appressed hairs on both sides. Bears racemes, 3 to 5 inches long, of two dozen or more, short-stalked, pea-shaped rosy-purple flowers. Its luxuriant foliage and great beauty make it a favorite late-flowering shrub.

IPOMOEA HORSFALLIAE BRIGGSI. Beautiful evergreen morning-glory, with masses of showy carmine-colored, fleshy flowers, native of tropical America. A most attractive climber for porches and pergolas in Florida and California. In temperate climates successful in greenhouses or out of doors, if potted plants are plunged in ground in sunny location after spring frosts are over.

33500. JASMINUM BEESIANUM. **Jasmine.** Purchased from Amos Perry, Enfield, Middlesex, England. A new Chinese novelty, the only red jasmine yet known. It is a quick grower and quite hardy. The flowers are very fragrant and of a bright, deep cherry red. Profuse bloomer.

38154. JASMINUM FLORIDUM. **Jasmine.** From La Mortola, Ventimiglia, Italy. Nearly evergreen shrub of rambling habit, with smooth-angled branches and alternate leaves of 3 to 5 nearly oval leaflets, one-half to 1½ inches long. Flowers golden yellow, borne in terminal cymose clusters, usually produced from July until late in the fall. Black fruits are about the size of small peas. Native of China. Hardy as far north as Washington.

40705. JASMINUM GIRALDI. **Jasmine.** From F. N. Meyer, Hsiku, Kansu, China. Small ornamental shrub of erect growth, 2 to 4 feet high, with small terminal clusters of yellow flowers, each three-fourths of an inch long, followed by showy black berries. Foliage pinnate, the leaflets in five pairs, each three-fourths of an inch long and half as wide (except the terminal one, which is twice as large). Of value for gardens and parks in dry, mild-wintered regions.

39120. JASMINUM HUMILE. **Jasmine.** From G. H. Cave, Darjiling, India. Diffuse shrub, attaining a height of 20 feet in the South, but in glass houses usually grown as a pot bush. Branches glabrous, angled. Leaflets 3 to 7, nearly oval. Bright yellow flowers borne in open clusters. This plant is somewhat hardier than *J. floridum* but is very similar in appearance. Blooms in summer and fall. Needs cool house if grown under glass.

38826. JASMINUM sp. **Jasmine.** From F. N. Meyer, Nantotchu, Shensi, China. A small shrub of the olive family, growing only from 1 to 3 feet in height, with bright green branches and bearing bunches of black berrylike fruits. Found on dry sterile mountain slopes among the scrub. Of possible value as a rockery shrub and along borders and paths in gardens and parks.

18577. JUNIPERUS CHINENSIS. **Chinese juniper.** Collected by F. N. Meyer, Shanhaikwan, China. A handsome ornamental juniper, narrowly cylindrical in shape; of erect habit of growth, somewhat like that of the Irish juniper; and with dense, glaucous or silvery-green foliage. The needles are stiffer and longer than those of the Irish juniper.

38803. JUNIPERUS CHINENSIS. **Chinese juniper.** A North China form of tall, graceful growth collected by F. N. Meyer, Nantotchu, Shensi, China. As it is able to withstand considerable drought and alkali, it is recommended as an ornamental evergreen for parks and gardens in the milder-wintered, semiarid sections of the United States.

27505. JUNIPERUS PROCERA. **East African cedar.** From Raphael Zon, Washington, D. C. Tall conifer, 100 feet high, from high altitudes of British East Africa, with straight trunk, yielding durable and valuable timber similar to that used in lead pencils. For testing as an ornamental shade tree.

39873. KENNEDYA RUBICUNDA. From B. Harrison, Burringbar, New South Wales. A long, coarse vine, bearing a profusion of red flowers. Foliage sometimes eaten by stock. Useful for arbors. It should be tested as a green cover crop, since it is said to contain a high percentage of nitrogen.

RHODESIAN FIG TREE (FICUS SP.), S. P. I. No. 13138.

Unlike the banyan, this Ficus does not produce aerial roots, and can easily be trained to a shapely trunk. In cheerful, pleasing contrast with its dark-green leaves, its trunk and larger branches are a golden-yellow color, produced by a thin papery epidermis, which is easily rubbed off. A beautiful shade or avenue tree for southern Florida. It thrives remarkably well on the Keys. Photographed (P812FS–P) February 2, 1915.

INTRODUCED LITCHI TREE (LITCHI CHINENSIS) IN BLOOM IN CUBA.

A budded tree propagated in the department greenhouses and sent to Mr. James Holmes at Herradura, Cuba, in January, 1911. The budwood was taken from a tree sent in from Hsinghua, Fukien, China, by Rev. William N. Brewster. When four years old from the bud, in 1915, it produced a few fruits. Recently trees at Tampa and Oneco, Fla., have borne excellent fruit. Photographed (P16670FS) February 21, 1916.

THE FIRST LITCHI FRUITS PRODUCED IN FLORIDA.

In September, 1909, trees of the litchi (*Litchi chinensis*), which were inarched from S. P. I. No. 21204 on seedlings in the greenhouse in Washington, were sent to Mr. E. N. Reasoner, of Oneco, Fla., who gave them special care. The photograph (P19833FS) is of two of the first fruits produced by one of these trees. They were of excellent quality, with small seeds. Received July 15, 1916. (Natural size.)

THE QUEENSLAND NUT (MACADAMIA TERNIFOLIA).

The fact that the Queensland nut will grow and fruit in California and Florida has been established, and it remains for American experimenters to start its cultivation on a commercial scale. The delicate flavor of the nut, resembling but richer than that of the filbert, and its extremely attractive appearance should insure its being added to the almond and the pecan on our dinner tables. Photographed (P10075FS) July 27, 1912. (Natural size.)

41679. KOELREUTERIA FORMOSANA. From Genjiro Takato, Taihoku, Formosa. An indigenous Formosan tree, related to *K. bipinnata,* but differing from that species in having subentire leaflets. A small ornamental tree, with handsome, compound foliage and spreading, terminal clusters of yellow flowers. Propagation by seeds or root cuttings.

KOKIA ROCKII. From J. F. Rock, Honolulu, Hawaii. Almost extinct relative of the cotton, and for breeding purposes should by all means be saved from extinction. A tree 15 to 25 feet high, found growing on exceedingly arid land and bearing large scarlet flowers of striking beauty. The seeds are covered with short dark-brown cotton, resembling the so-called Peruvian cotton.

KOLKWITZIA AMABILIS. Rare and rather remarkable western Chinese shrub, related to Abelia and Diervilla, bearing pairs of flowers (over half an inch long) somewhat resembling those of Abelia. These are deep rose color in the bud, paler when open, the inner surface of the lower lobe being white, blotched with orange at the base. The persistent calyx is elongated beyond the small bristle-covered fruit. Apparently hardy; erect shrub with slender stems and branches.

LAGENARIA VULGARIS. **South African pipe gourd.** Annual vine suitable for growing south of New York. To make pipes let gourds mature, cut off crooked necks, clean inside and scrape outside, fit with plaster or meerschaum bowl and rubber mouthpiece, as described in Circular No. 41, Bureau of Plant Industry. Culture like that of cucumber. Straw under growing gourds prevents decay.

31102. LALLEMANTIA IBERICA. From Haage & Schmidt, Erfurt, Germany. A drought-resistant labiate, growing wild on rugged mountain slopes in Asia Minor, Persia, and Palestine. It is cultivated in southern Russia for the high-grade drying oil yielded by its seeds.

33319. LARIX DAHURICA. **Larch.** From D. D. Romanoff, Torchok, Russia, through F. N. Meyer. Forms large forests in Manchuria and eastern Siberia. A valuable timber and ornamental tree, reaching 80 feet in height. It can be clipped and pruned for use in formal gardens.

LAWSONIA INERMIS. **"Henna plant."** Rapid-growing, ornamental, evergreen, tropical shrub, 6 feet high, with glaucous leaves and small yellowish flowers, produced in large, showy panicles, exhaling a strong fragrance, especially at night. They contain a volatile oil used in perfumery. Recommended for hedges and ornamental purposes.

LEPARGYRAEA ARGENTEA. **Buffalo berry.** Large shrub or small tree with edible red or yellow fruits the size of a currant. These are not considered very palatable raw, but make a very superior jelly. Fruits are gathered when they begin to shrivel by shaking the trees, the berries being caught on sheets. Much resembles the so-called Russian olive (*Elaeagnus* spp.) in foliage. Native of the Missouri River valley and westward. Collected by Dr. David Griffiths.

LEUCAENA GLAUCA. From C. D. Stearns, Pago Pago, American Samoa. An unarmed acacialike shrub or small tree, with globular heads of whitish flowers. Propagates readily from cuttings. For this reason and because cattle do not relish the leaves, it is a favorite hedge plant in many countries. However, it is reported that boiled crushed seeds are used for forage in Mauritius.

41485. LICANIA PLATYPUS. **Forest sansapote.** From Carlos Werclé, Costa Rica. Very large and handsome forest tree, valuable for its timber and its edible fruits. The lumber is said to be considered nearly as valuable as that of cedrela, and the fruits, though smaller, and with less flesh than those of other sansapotes (*Licania* spp.), are reported to have a very pleasing flavor.

38807. LIGUSTRUM QUIHOUI. **Privet.** From F. N. Meyer, Shensi, China. Well-rounded, deciduous, bushy shrub of somewhat diffuse habit, up to 6 feet high, with narrow leaves 1 to 2 inches long, slender downy panicles of fragrant white flowers and masses of purplish or black fruits that contrast with the fine evergreen foliage. Used as stock for *Olea fragrans* by the Chinese.

26877. LIGUSTRUM VULGARE. **Privet.** From F. N. Meyer, Baidari, Crimea, Russia. Reported as a variety seemingly able to stand more drought and heat than the usual forms. Found growing in very dry exposed places. Recommended as of possible value as an ornamental shrub in regions with long, dry summers and fairly mild winters.

LITCHI CHINENSIS. **Litchi.** Handsome evergreen tree, about 25 feet high, indigenous to South China. Produces in midsummer nearly round reddish fruits, about $1\frac{1}{2}$ inches in diameter, with a rough, brittle rind and juicy white flesh of delicious flavor. Important commercial fruit in South China. Fruits are eaten fresh, canned, or dried, in which last form they are called "litchi nuts." (Pls. VI and VII.)

40186. LONICERA DEFLEXICALYX. **Honeysuckle.** From the director, Royal Botanical Gardens, Kew, England. Strikingly beautiful deciduous shrub, 8 to 10 feet high, of spreading habit. Branchlets drooping. Produces a great abundance of yellow twin flowers, five-eighths of an inch long, in May and June, displayed to good advantage on the upper side of the long feathery branches. Fruits orange red. Native of China.

LONICERA MAACKII. **Honeysuckle.** A beautiful, rapid-growing, flowering shrub, attaining a height of 10 feet, with spreading branches, ovate-elliptic leaves, in the axils of which are borne clusters of trumpet-shaped flowers, white on first opening, rapidly turning yellow. Produces red berries in abundance.

37644. LONICERA RUPRECHTIANA. **Honeysuckle.** From the director, Botanic Garden, Petrograd, Russia. Shrub (12 feet high), with dark-green foliage and pure white flowers on long flower stalks. Fruits red or yellow. Hybridizes easily with *L. tatarica;* recommended to experimenters in the Northwest because of the rarity of the pure species and its unusual hardiness.

35188. LONICERA THIBETICA. **Honeysuckle.** From M. Maurice L. de Vilmorin, Paris. A handsome deciduous shrub of low spreading habit when young, forming in the adult stage a dense rounded mass of intertwined branches, 6 feet high and 10 feet through. Leaves dark glossy green above, covered with a dense white felt beneath. In May and June a mass of lilac-colored fragrant flowers; berries red; native of Tibet.

40185. LONICERA TRICHOSANTHA. **Honeysuckle.** From the director, Royal Botanical Gardens, Kew, England. A deciduous bush of vigorous growth and well-rounded, densely leafy habit, 8 feet or more high, the whole plant with a pale grayish aspect. Leaves nearly oval, 1 to 2 inches long, dull gray green above, paler below. Flowers pale yellow, becoming darker, one-half to three-fourths of an inch long. Berries red. Native of China.

36748. LONICERA sp. **Honeysuckle.** From F. N. Meyer, Hsiao Wutaishan, China. A bush honeysuckle of large growth and decidedly ornamental habits. Leaves are large, dark green, and set off beautifully the bright red berries borne in pairs on long, erect peduncles. This species is valuable as an ornamental shrub in the cooler sections of the United States.

40691. LONICERA sp. **Honeysuckle.** From F. N. Meyer, Taipintsai, Kansu, China. A low-growing species of shrub honeysuckle, having slender branches and small leaves. Collected at an altitude of 10,000 feet. Of value as a border shrub for the cold and dry sections of the United States.

39859. LOROMA AMETHYSTINA. **Feather palm.** From C. B. Hale, Santa Barbara, Cal. Very beautiful palm, 25 to 40 feet high. Leaves 6 feet or more long, composed of 70 to 80 pairs of pinnæ, with slender, drooping tips. Inflorescences about 2 feet long, deep purple at first, becoming purplish pink. One of several species of palm hitherto called *Seaforthia elegans*.

41330. LUPINUS sp. **Tarhui.** From O. F. Cook, Ollantaytambo, Peru. A handsome species with blue and white flowers, marked with yellow on the standard, and with very thick, fleshy pods. Commonly cultivated in Peru at elevations of 9,000 to 11,000 feet; apparently a native species. Not especially prolific, but considered a delicacy. The seeds are ground into a meal and soaked in running water to extract bitterness.

MACADAMIA TERNIFOLIA. **Queensland nut.** Small evergreen nut and timber tree, 40 to 60 feet high, native of eastern Australia, endures light frost. Nuts produced in about seven years from seed, edible, nutritious, with a rich agreeable flavor, much like the hazelnut, but richer and with very hard shells. Timber reddish, fine-grained, takes good polish, used in cabinetwork, veneers, shingles, etc. (Pl. VIII.)

28489. MALUS BACCATA × SYLVESTRIS. A very promising hybrid of the Siberian crab with the Baldwin and Yellow Transparent, by Dr. Walter Van Fleet. Trees very prolific. Fruits 1½ to 2 inches in diameter, slightly flattened at both flower and stem ends, yellow, streaked with red; flesh firm and crisp with strong crab-apple flavor. Promises well as shipper and keeper.

27060. MALUS SYLVESTRIS. **Afghasian apple.** From F. N. Meyer, Caucasus, Russia. Large, grayish green apple with one cheek narrowly streaked with red, fresh subacid flavor. Picked in late October or early November, the fruits ripen slowly and keep well until late spring. May prove of value for warmer sections of the United States, especially for the Gulf regions.

27061. MALUS SYLVESTRIS. **Apple.** From F. N. Meyer, Dioscuria, near Sukhum Kale, Caucasus, Russia. A Circassian apple indigenous to the Caucasus. Reported as being a very fine fruit. Suitable for mild-wintered sections of the United States. Not yet fruited in America.

27152. MALUS SYLVESTRIS. **Apple.** From F. N. Meyer, Kopetnari, Caucasus, Russia. Trees obtained from a native Mingrelian orchard, able to stand high summer temperatures but require mild winters. Said to produce large red apples of fine quality. To be tested in the Southern States.

27153. MALUS SYLVESTRIS. **Apple.** Received through F. N. Meyer, from near Kopetnari, Caucasus, Russia. A white apple, said to grow very large, some fruits weighing several pounds each. The trees are able to endure high summer temperatures, but require mild winters. To be tested in the southern sections of the United States.

30229. MALUS SYLVESTRIS. **Helm apple.** From Dr. F. R. Ramsdell, Columbia, Isle of Pines. A very promising apple. Fruit oblate, conical, red, with yellow white-dotted base; flesh creamy white, sweet, and juicy. Fruits very early and the apples hold weeks after they are ripe. Bears in two years after planting. A splendid summer apple for the warm sections.

30326. MALUS SYLVESTRIS. **Apple.** From Khotan, Chinese Turkestan, through F. N. Meyer. A large variety of the so-called *Muzalma* apple (S. P. I. 30309). This latter is of medium size, yellowish green; peculiar glassy texture; sweet taste, somewhat insipid; good keeping qualities, ripening in autumn; able to withstand considerable drought and alkali. Introduced for trial in the Southwest.

30327. MALUS SYLVESTRIS. **Apple.** From F. N. Meyer, Khotan, Chinese Turkestan. Variety of apple called *Kizilalma.* Because of its ability to stand drought, soil alkali, and neglect, it may prove of value under irrigation in the hot desert regions of our Southwest. Fruits medium large, of red color throughout, sweet, somewhat insipid. (Pl. IX.)

30353. MALUS SYLVESTRIS. **Muzalma apple.** From Karawag, Chinese Turkestan, through F. N. Meyer. Variety thought to be identical with S. P. I. 30309, from Khotan, with medium-sized yellowish green fruits of peculiar glassy texture; taste sweet but somewhat insipid; good keeping qualities; ripening in autumn; able to withstand considerable drought and alkali. Becomes spreading when old.

31653. MALUS SYLVESTRIS. **Apple,** *Wainwright.* From W. J. Newberry, curator, Botanic Gardens, Pietermaritzburg, Natal, South Africa. A good subtropical apple.

39829. MALUS SYLVESTRIS. **Limoncello apple.** Best variety grown in Italy for general market. Presented by Dr. Gustav Eisen, Rome. Lemon-yellow, with light flush; flesh crisp, white, juicy; flavor strong, suggesting Cabernet grapes; fine shipper; especially adapted to warm, dry climates. Not to be preferred to best apples from Northern States, but reported to be superior to any grown in the central and southern plains of California.

27108. MALUS sp. From E. C. Parker, Mukden, Manchuria. Common in Manchuria as far north as 45°. Very hardy and healthy. Attains a height of 15 feet and bears small fruit one-half to three-quarters of an inch in diameter, resembling a thorn-apple. Valuable in America for grafting or budding purposes only. Grafted on apple stock from Washington.

MAMMEA AMERICANA. The **Mammee-apple.** A large West Indian tree related to the mangosteen, erect, unusually handsome, with dark green, glossy foliage. Fruits round, 5 inches in diameter, with thick, leathery rind and firm, yellow flesh, inclosing several large seeds. Flavor suggests the apricot.

7104. MANGIFERA INDICA. **Amini mango.** A small but unusually attractive variety from Bangalore, India. Oval, compressed, about 8 ounces in weight, bright yellow in color, overspread with crimson. Aroma pronounced, flavor very spicy; flesh bright yellow and free from fiber. Seems more productive than many Indian mangoes and of probable commercial value. Ripens rather early.

8730. MANGIFERA INDICA. **Paheri mango.** From Bombay, India. Oval, plump, about 10 ounces in weight, dull yellow in color, blushed red around base. Flesh orange, free from fiber, of very rich, spicy flavor. Some authorities have called it the best flavored mango of Bombay. Fairly productive, and ripens in midseason. Presented by the late J. N. Tata, of Bombay. (Pl. X.)

10637. MANGIFERA INDICA. **Brindabani mango.** Named from Indian town; introduced in 1903. A very precocious and productive variety which appears to be rather liable to disease. Ripens July to September. Fruit oblate, medium size, 8 to 9 ounces in weight, orange-yellow, flesh rather coarse, juicy, with a good deal of fiber; flavor fair to good. Tree small, spreading.

10662. MANGIFERA INDICA. **Gola mango.** From Seharunpur, India, 1904. Large, ovate, practically fiberless, yellow mango of good flavor; rather late in ripening; color yellow, but a trifle dull; apparently not very productive, but fairly resistant to disease. Too little tested yet to determine its commercial possibilities. Deserves further trial.

11645. MANGIFERA INDICA. **Cambodiana mango.** From Saigon, Cochin China, through M. E. Haffner. A long, compressed, beaked fruit about 8 ounces in weight and deep yellow in color. Seems to be more productive than most Indian mangos and of a distinctive flavor; quality good. Buds from seedling in the Miami garden.

23426. MANGIFERA INDICA. **Itamaracá mango.** From Dr. Bello, Rio de Janeiro, Brazil. Introduced in 1908. Fruit small, flattened vertically, $2\frac{3}{4}$ inches in largest diameter; greenish yellow, overspread with dull crimson; fairly rich flavor and fine texture; some fiber, but juicy; develops fine aroma when properly ripened; matures July to August; fairly productive. An attractive variety, but rather subject to disease and possibly not of commercial value.

29333. MANGIFERA INDICA. **Haden mango.** Seedling of the original Gale Mulgoba tree planted in 1902, at Cocoanut Grove, Fla., by Capt. F. P. Haden. Fruit showiest of varieties yet fruited in Florida, apricot yellow overspread with rich crimson, skin thick, flesh firm, very juicy, texture a trifle coarse, fiber sometimes objectionable; flavor good to very good; occasionally weighing 24 ounces; ripens in July; tree productive; fairly disease resistant.

39338. MANIHOT DICHOTOMA. **Maniçoba.** From Dr. V. A. Argollo Ferrão, Bahia, Brazil. One of the Brazilian rubber trees, the source of Jequie rubber. The tree is exceedingly variable in leaf and growth. It will not stand frost, and requires a rainy season in summer. It ordinarily requires a year's growth before being tapped.

39340. MANIHOT HEPTAPHYLLA. **Rubber tree.** From Dr. V. A. Argollo Ferrão, Bahia, Brazil. Tree 20 to 25 feet high, with dark-brown bark and purplish twigs. Seeds larger and paler than those of the Ceara rubber (*M. glaziovii*). Reported as producing a very good quality of rubber. One of the so-called Maniçoba rubber trees, native of South America.

39339. MANIHOT PIAUHYENSIS. **Remano Maniçoba rubber** tree. From Dr. V. A. Argollo Ferrão, Bahia, Brazil. Tree described as reaching a height of 8 to 16 feet; branches forked 2 to 3 times. Reported superior to Ceara rubber (*M. glaziovii*) in yield and quality of produce. Seeds are larger than those of the former species, less hard and horny, and germinate more readily.

42718. MAXIMILANEA sp. Presented by H. M. Curran, Cartagena, Colombia. Small tree or shrub related to the annatto tree (*Bixa orellana*). The flowers of the known species are large, showy, and of a bright or golden-yellow color, produced in the axils or in large terminal clusters. Leaves palmately divided, sometimes with fingerlike lobes.

26323. MAYTENUS BOARIA. From José D. Husbands, Limavida, Chile. Beautiful shade tree and hedge plant, which succeeds well on otherwise bare and dry lowlands. The hard wood is fine grained and elastic, mostly plain white or pale yellow, sometimes beautifully veined with red and olive.

41681. MELASTOMA MOLKENBOERII. From M. Buysman, Jardin Botanique, Lawang, Java. A large shrub or small tree, 15 to 20 feet high, with terminal fascicles of 3 to 5 rose-colored flowers. The handsome flowers and deeply veined leaves make this a plant of considerable ornamental value in the practically frostless regions of this country, possibly as a greenhouse shrub.

35212. MELICOCCA BIJUGA. **Genip.** From Henri Pittier, Caracas, Venezuela. Slow-growing tree, attaining 20 to 60 feet in height, with compound leaves (two pairs of leaflets), whitish flowers in terminal racemes, and edible, green or yellow, fruits about the size and shape of plums, and possessing a grapelike flavor. Family Sapindaceæ.

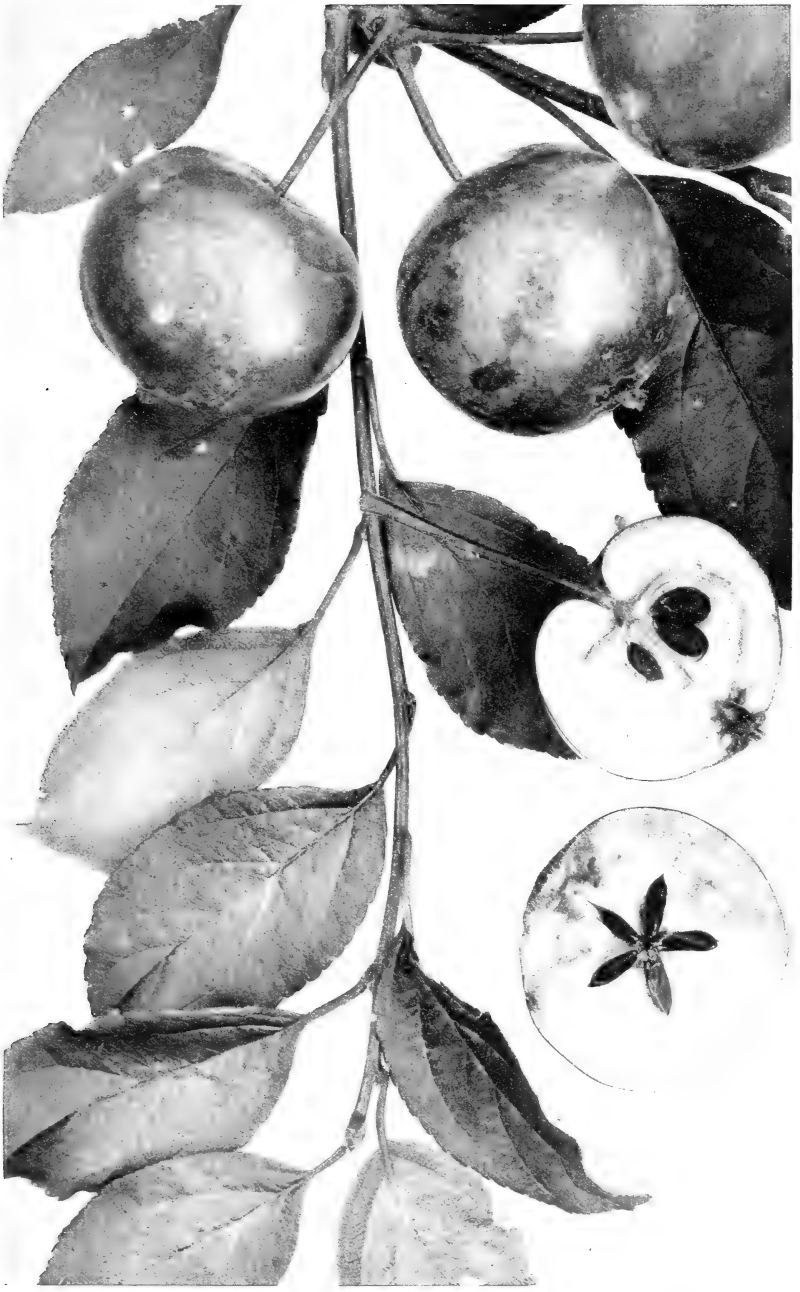
41809. MIMUSOPS ELENGI. From G. Regnard, Port Louis, Mauritius. A tropical tree related to the sapodilla, bearing a small, sweet, edible fruit. In India the sapodilla is grafted on some species of Mimusops in preference to its own roots, and this species may prove of value in Florida for the same purpose.

40913. MORINGA OLEIFERA. From Wilson Popenoe, Cienfuegos, Cuba. Very attractive, small, ornamental tree, 15 to 20 feet high, with pinnately compound leaves of pleasing light-green color, and masses of slightly fragrant white flowers arranged in axillary panicles 6 to 8 inches long. The slender triangular seed pods are often a foot in length. Considered an antidote for manchineel poisoning.

27048. MORUS ALBA. **White mulberry.** From Leon Chenault, Orleans, France. Variety *Fastigiata.* A rare variety of white mulberry, valuable as an ornamental pyramidal tree.

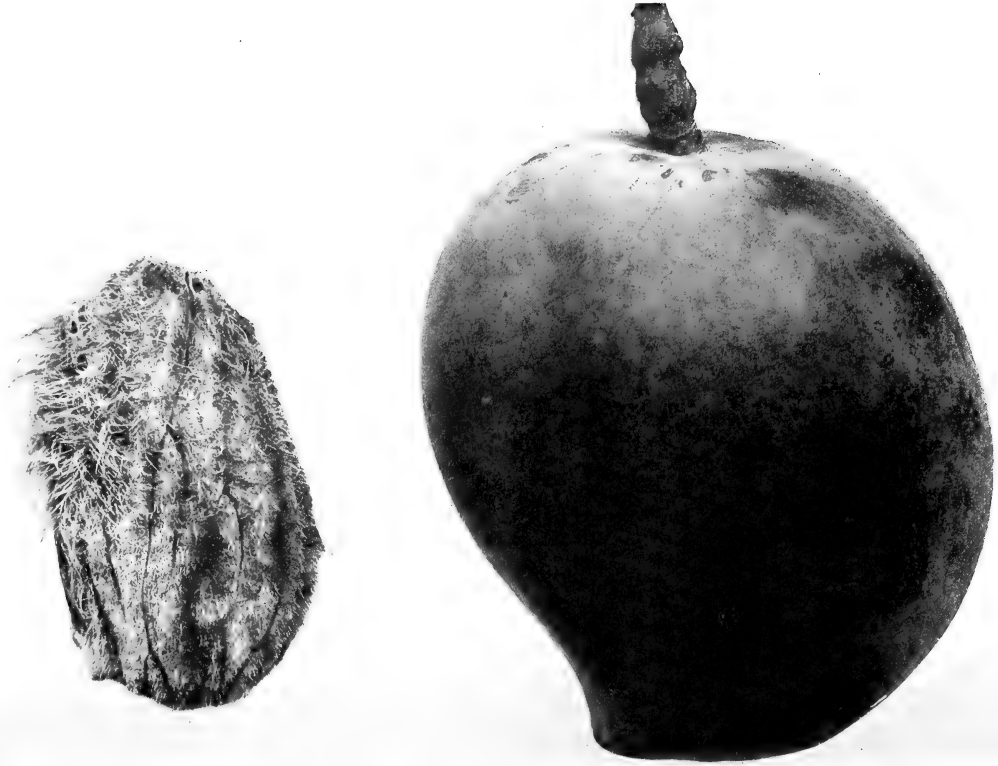
40215. MORUS ALBA. **Mulberry.** From seeds taken from dried fruits received from the Amir of Afghanistan, Kabul, through A. C. Jewett. The dried fruits of this mulberry are said to form the principal food of the poor people of the mountainous regions where it grows.

30330. MORUS NIGRA. **Black mulberry,** *Shatoot.* From F. N. Meyer, Khotan, Chinese Turkestan. Berries large, of dark violet color; very persistent, fresh subacid flavor; ripening from early August to late September. Trees grafted usually 1 meter above ground, so fruit may be picked easily. Recommended as home fruit in desert regions under irrigation. Probably hardy in protected places in New York and New England. (Pl. XI.)



THE KIZILALMA APPLE OF KHOTAN (MALUS SP.), S. P. I. NO. 30327.

The leaves, the fruit (outside and in), the seeds, and the wood of the young twigs of this strange apple from Khotan, Chinese Turkestan, are tinged with red; and, although the fruit is somewhat insipid in flavor, it seems worthy of the attention of apple breeders, on account of its extreme earliness, ripening in May. It has been suggested as a stock. Photographed (P19662FS) at Chico, Cal., May 18, 1916. (Natural size.)



THE PAHERI MANGO (MANGIFERA INDICA), OF BOMBAY, S. P. I. No. 8730.

This variety, which ranks as one of the finest flavored mangos in Bombay, has fruited more regularly in Florida than the Mulgoba; and, though its color is not so bright, it is a very promising variety for Florida. Its seed has only short fibers, making the edible portion peculiarly fiberless. Presented by the wealthy Parsee, Mr. J. N. Tata, of Bombay, through Messrs. Lathrop and Fairchild, March, 1902. Photograph (P16122FS) of fruit from tree in Miami Garden, August 2, 1914. (Natural size.)

BLACK MULBERRY (MORUS NIGRA), FROM TURKESTAN, S. P. I. No. 30330.

A variety of black mulberry ripening from early August to September in Chinese Turkestan, where it is called the Shatoot or King mulberry. Its extreme vigor, its productiveness, and the tart character of the fruit make it especially worthy of dissemination. Very similar to the Bidwell mulberry. Photographed (P518FS–C) at Chico, Cal., June 26, 1915. (Natural size.)

THE BAROUNI OLIVE OF TUNIS, S. P. I. No. 12569.

This is reported by Kearney, who introduced it, to be the largest olive in Tunis. It appears to be a shy bearer, and the fruits may be more difficult to process than smaller varieties, but it deserves further trial in California. Photographed (P9067FS) October 25, 1911, at Chico, Cal. (Under natural size.)

41508. MUSA sp. **Banana.** From Alfred Bircher, Matania el Saff, Egypt. Plants grown from seeds. Said to have been produced by the Orinoco banana, which is ordinarily seedless in America. Possibly cross-pollinated. Of unusual interest to breeders interested in the banana.

MYRCIARIA CAULIFLORA. **Jaboticaba.** From Rio de Janeiro, Brazil. Collected by Dorsett, Shamel, and Popenoe. Remarkable fruit tree, 40 feet high. Popular among Brazilians. Maroon-purple, thick-skinned fruits resembling grapes with delicious vinous white pulp, borne on trunk, branches, and twigs in such numbers as at times almost to conceal them. May stand light frosts.

41057. MYRCIARIA FLORIBUNDA. **Guava berry** tree From Longfield Smith, St. Croix, Danish West Indies. Myrtaceous tree, 30 to 40 feet in height, with papery leaves; small, white flowers; and small, edible, black, reddish, or yellow fruits, which have a pleasantly acid, aromatic flesh. They are said to make a delicious preserve. Native of the West Indies, Guiana, and Brazil.

41256. MYRICA RUBRA. **Yang mae.** From F. N. Meyer, Hangchow, Chekiang, China. Seedlings of a rare and interesting evergreen Chinese fruit tree, of which many inarched varieties are grown in Chekiang. Fruits of grafted varieties are very showy, the size of small crab apples, dark purplish in color, and have a pleasant, vinous flavor of their own. Trees difficult to transplant.

NEPHELIUM LAPPACEUM. **Rambutan.** A spreading tree. One of the most attractive and delicious fruits of Malaysia. Related to the litchi, but having a more highly perfumed flavor. The thick-skinned fruits, about the size of a small hen's egg, are a beautiful wine-red color and are covered with slender, soft spines. The white pulp surrounding the large seed is juicy and delicately perfumed.

12569. OLEA EUROPEA. **Barouni olive.** From Susa, Tunis, Africa, through T. H. Kearney. The largest fruited olive of the Tunisian region. Culture confined exclusively to Sahel and Kalaa Srira. One of the best of the green table olives. (Pl. XII.)

12684. OLEA EUROPEA. **Bidh el Hamman olive.** From T. H. Kearney, Zaouia du Mornag, near Tunis, North Africa. Second largest olive of the Tunisian region and said to be one of the best of the table olives.

12685. OLEA EUROPEA. **Saiali Magloub olive.** From T. H. Kearney, Zaouia du Mornag, Tunis, North Africa. Tree with very abundant foliage. Fruit medium sized but of excellent quality as a table olive.

58656°—17——4

12910. OLEA EUROPEA. **Chitoui olive.** From T. H. Kearney, Tunis, North Africa. The principal oil-producing olive of northern Tunisia, but not so well adapted to the drier, hotter regions as other sorts, like the *Chemlali.*

13257. OLEA EUROPEA. **Grosse Aberkan olive.** From Dr. L. Trabut, Mustapha, Algeria. Rather large, somewhat curved fruits, ripening somewhat earlier than the *Mission.* The trees seem to be very vigorous and strong growers. The foliage is not so dense and is of lighter hue than the other African varieties.

13567. OLEA EUROPAEA. **Chemlali olive.** From Tunis, North Africa, through T. H. Kearney. Small oil-producing olive, grown in immense plantations around Sfax, where only from 5 to 10 inches of rain falls; irrigated for first two or three summers only. Orchards created by planting pieces of wood from bases of old trees. Promising variety for California because of its robust growth.

27172. OLEA EUROPAEA. **Olive.** From F. N. Meyer, Nikita, Crimea. Hardy variety of large-fruited olive from a tree several centuries old which has successfully withstood 10° F. below zero, at which temperature other varieties were frozen to the ground.

27173. OLEA EUROPEA. **Olive.** From F. N. Meyer, near Gagri, Caucasus, Russia. A wild bushy olive tree said to be very resistant to drought. Found growing plentifully on dry mountain slopes and cliffs along the Caucasian shore of the Black Sea.

OPHIOPOGON JAPONICUS. A small, low-growing, evergreen plant, related to the lily of the valley, with grasslike leaves, 12 inches long, and racemes of lilac to whitish flowers. Used in Japan and everywhere in the Mediterranean region as a ground cover on the shady side of the house and under trees where it is too shady for grass to grow. Suitable for border edgings; needs no clipping; hardy.

38839. OPHIOPOGON sp. From F. N. Meyer, Nantotchu, Shensi, China. An Ophiopogon with long, slender leaves, remaining green all winter. Bears long spikes of black berries. Found on mountain slopes of decomposed rock, between low scrub. Of value as an edging plant along pathways and as a ground covering in shady places for the mild-wintered sections of the United States.

40033. OSTEOMELES SCHWERINAE. From F. N. Meyer, Kwatsa, Kansu, China. Dense shrub 2 to 5 feet high, found on dry rocky cliffs and waste places. Said to produce an abundance of white flowers in spring; bears small bluish black berries in late fall.

PARINARI EXCELSUM. **Gray-plum.** Very large tree from West Africa, valuable both as an ornamental and as a timber tree; also produces edible fruits in great abundance, which are about the size of a large plum, but have large stones and dry, rather insipid pulp. Foliage striking, heavy, the leaves being dark green above, nearly white below, somewhat leathery; white flowers in large terminal clusters. Wood compact and durable.

35469. PARKIA TIMORIANA. **Cupang.** From O. W. Barrett, Manila, P. I. Large, leguminous tree reaching a height of 130 feet, with large, vase-shaped, wide-spreading crown. It grows best in rather open, second-growth forests where the dry season is pronounced. Requires good soil and plenty of light. The wood is light, soft, and of value for paper pulp. Pods a foot long, relished by cattle, contain 15 to 20 seeds; roasted and eaten by Filipinos.

PARMENTIERA CEREIFERA. **Candle tree.** A remarkable tree, native to Panama. It grows to a height of 30 to 40 feet; and produces from the trunk and older branches a profusion of almost sessile, bell-shaped, white or greenish flowers. The long, fleshy fruits, a foot or more in length, and only one-half to three-fourths of an inch in diameter, closely resemble wax candles in color and appearance. They are edible and are delightfully fragrant.

PASSIFLORA EDULIS. **Passion fruit.** Perennial vine, suitable for greenhouses and nearly frost-free countries. Fruit ovoid, 2 to 3 inches long, purple, seeds numerous; pulp acidulous, pleasantly flavored; much used in tropical countries in fruit salads, confectionery, and for flavoring ices and cool drinks. Requires rich soil. Best grown on trellises. Closely related to southern maypop.

PASSIFLORA LIGULARIS. A perennial vine, with evergreen, heart-shaped leaves and strikingly handsome green and purple flowers. Fruits medium sized, roundish or oval, with soft, edible, sweetish pulp embedding numerous small seeds. Used in the preparation of cooling drinks, fruit sirups, and desserts. For fruiting and breeding experiments.

39223. PASSIFLORA MALIFORMIS. **Passion fruit.** From F. L. Rockwood, Bogota, Colombia. A climbing vine with attractive flowers, known in Colombia as the "Yellow Curuba." Fruit is about 2 inches in diameter, dingy yellow color when ripe, with a hard coat nearly one-fourth of an inch thick and filled with seeds and a very agreeable pulp, which is eaten without preparation or is often made into delicious sherbets.

42032. PASSIFLORA MIXTA. **Passion fruit.** From Lodovic Söderstrom, Quito, Ecuador. Handsome climbing vine with rose-colored flowers and edible fruits nearly 4 inches long. In Ecuador the fruit is used to flavor ice cream, etc., and is also often eaten raw. The vines are said to be very prolific, bearing as many as 100 flowers and fruits at the same time.

38806. PAULOWNIA FORTUNEI. From F. N. Meyer, Nantotchu, Shensi, China. Medium-sized tree, able to withstand drought and a certain amount of alkali. Planted on sandy land as a soil binder and windbreak. Wood very light, used in furniture, bowls, jars, children's toys, etc. Valuable as an ornamental in mild-wintered sections.

42036. PAULOWNIA MIKADO. Magnificent ornamental tree much resembling the well-known *P. imperialis*, but having slightly shorter panicles of larger flowers which are lilac or purple tinted and dotted with purple on the inside of the corolla. Native of Central Formosa. Paulownia is propagated from root cuttings in Japan.

36017. PENTAPETES PHOENICEA. From P. J. Wester, Lamao, Bataan, Philippine Islands. A robust, sterculiaceous herb, attaining a height of 2 meters. On account of its attractive scarlet flowers it makes a very good ornamental. Collected on the Island of Mindanao.

PERILLA FRUTESCENS. Annual plant similar in growth to Coleus. Extensively cultivated in Japan for oil, of which the seeds contain 17 per cent. Oil principally used in making the remarkable oil papers of Japan. Considered superior to linseed oil for many purposes. Requires long season to mature seeds, which are inclined to shatter badly.

19297. PERSEA AMERICANA. **Wester Avocado.** Variety of the West Indian type, originated on the place of John Thomas Peacock, at Cocoanut Grove, Fla., from seed planted about 1871. Fruit medium, 18 ounces in weight, chocolate brown to maroon, broadly pear shaped; dark yellow meat, smooth and somewhat mealy in texture, variable in flavor. sometimes rich. An excellent summer variety for home use.

26690. PERSEA AMERICANA. **Butler avocado.** West Indian type. Obovate, about 15 ounces in weight, light green in color, with rich yellow flesh of excellent quality. A prolific and regular bearer. A very promising summer-fruiting variety for southern Florida; ripens in August. (Pl. XIII.)

THE BUTLER AVOCADO (PERSEA AMERICANA), S. P. I. NO. 26690.

An excellent variety of the West Indian type. The fruit weighs about 1 pound, is light green in color, with yellow flesh of excellent quality. It has proved to be a regular and prolific bearer, ripening its crop in late summer. Originated at the Miami Plant Introduction Garden from seed presented by Mr. C. W. Butler, of St. Petersburg, Fla. Photographed (PS257FS) September 1, 1911.

SEVEN-YEAR OLD CLUMP OF BAMBOO (PHYLLOSTACHYS BAMBUSOIDES) AT THE CHICO GARDEN.

This is the great hardy timber bamboo of Japan. Almost every Japanese farmer has a clump of it where he can get material for various uses about the place. The shoots of this species are not edible. Photographed (P15917FS) October 7, 1914.

26698. PERSEA AMERICANA. **Avocado.** An unnamed seedling of the West Indian type; originated at Fort Myers, Fla. Fruit long and slender, weighing 10 to 16 ounces, with a very thick green skin and abundant flesh of good quality. The seed is small in proportion to size of fruit. Ripens in August and September.

26699. PERSEA AMERICANA. **Avocado.** Unnamed variety of the West Indian type, from bud wood secured by P. J. Wester, from C. W. Butler, St. Petersburg, Fla. Fruit green, pear shaped to round; skin thin, seed loose in cavity; quality good; said to be a very prolific bearer. Season September to October. Doubtful if good shipper.

26707. PERSEA AMERICANA. **Avocado.** Unnamed variety, West Indian type, from bud wood received from W. H. Fulford, Fulford, Fla. Fruit weighs 18 ounces, pear shaped, bright red to maroon in color, of good quality; prolific. Considered a good summer variety of good shipping qualities.

34904. PERSEA AMERICANA. **Avocado.** A variety secured by G. N. Collins at Merida, Mexico, and reported to be from a very famous tree growing at some distance from the town of Merida. Not yet fruited in the United States.

36270. PERSEA AMERICANA. **Avocado.** Unnamed seedling of the West Indian type; originated at Miami Plant Introduction Garden. Fruit oblong oval, about 24 ounces in weight, bright green, with deep yellow dry flesh of very rich flavor; seed medium to small. Season, August to September. A very prolific and promising variety strongly resembling *Pollock*, but smaller and more productive.

PHOEBE NANMU. **Lanmu** or **nanmu.** One of the most valuable of all Chinese timbers. Evergreen and singularly handsome tree, attaining great size and with clean, straight trunks and wide-spreading heads. The wood is close grained, fragrant, greenish white and brown in color, easily worked and very desirable. It is highly esteemed in furniture making and for finishing fine buildings in China.

24760. PHYLLOSTACHYS BAMBUSOIDES. **Madake bamboo.** From Nagasaki, Japan, through William D. Hills. Best timber bamboo in Japan, growing to 60 feet eventually; planted there in large groves on well-drained, rich soil. Spreads underground, but easily controlled by ditches. Timber used for every conceivable purpose—ladders, basketry, fencing, stakes, crates, irrigating pipes, etc. (Pl. XIV.)

PHYTOLACCA DIOICA. **Ombu.** Large, evergreen, ornamental, and shade tree from South America. It grows with astonishing rapidity, forming a huge buttressed trunk and a dense spreading top. Leaves are slender stalked, somewhat resembling those of the poplar. Male and female flowers borne on different trees in more or less pendulous racemes, followed on pistillate trees by small berrylike inedible fruits. Withstands only light frosts.

PINUS SINENSIS. The **hard pine** of northern China. Withstands long drought, cold, and alkali. Of extremely picturesque habit when grown singly. Extensively used in temple courts and palace gardens. Produces medium-sized, straight trunks in forest plantings. Wood close grained and durable. Distinct from *P. densiflora.*

PINUS THUNBERGII. **Japanese black pine.** From Dr. Nishimura, Mukden, Manchuria, through F. N. Meyer. Tree 100 to 120 feet high, with spreading, often somewhat pendulous branches, forming a broad pyramidal head. Branches orange yellow. Leaves bright green, 3 to 4½ inches long. Wood resinous, tough, durable, suitable only for indoor work. Hardy; prefers sandy soil. Splendid for avenues.

PISTACIA CHINENSIS. **Chinese pistache.** Tall deciduous, dioecious tree, strikingly ornamental, with large pinnate leaves, wine-red when young, changing to vivid green in summer and flaming scarlet and yellow in fall. Berries inedible. Highly recommended as a shade and ornamental tree. Trunk attains 16 feet in circumference.

PISTACIA VERA. **Pistache** or **pistachio.** Small deciduous tree, cultivated in the Mediterranean region for its nuts, with characteristic green meat and delicate flavor, used extensively in confectionery; becoming a very popular table nut. The best varieties bearing large nuts grafted on special stock are to be tested under supervision. · Promising new dry-land tree crop.

PITHECOLOBIUM LIGUSTRINUM. **Payande.** A small tree branching from the base of the trunk and presenting a very bushy appearance. It has small clusters of pinkish white flowers and compound leaves composed of but one pair of narrow leaflets. Fairly common in the American Tropics and possibly of some value as an ornamental in the southernmost sections of the United States.

PITTOSPORUM FLORIBUNDUM. Handsome small evergreen tree with alternate leaves found in subtropical Himalaya, ascending to 5,000 feet on hills. Bark bitter and aromatic and reported to possess narcotic qualities. Plant contains an aromatic resin, yellow in color, having very tenacious properties. Timber light colored, strong and tough, but of small size.

36606. PLEIOGYNIUM SOLANDRI. From J. F. Bailey, Brisbane, Queensland, Australia. A moderate-sized tree, 40 to 60 feet high with a trunk 2 to 3 feet in diameter. Timber when first cut is soft, but afterwards becomes hard and tough. Possibly of use as a stock for the less hardy mango, cashew, or Spondias.

26614. POPULUS BEROLINENSIS. **Poplar,** var. *Rossica.* From F. N. Meyer, Liesnoi, Russia. A very hardy variety of the ordinary Berlin poplar, widely planted in and around Petrograd as a shade tree; mostly closely pruned there, but of open habit of growth under ordinary conditions.

22447. POPULUS BREVIFOLIA. **Chinese poplar.** From F. N. Meyer, Taijatsoa, China. An extremely slender but very graceful tree, suitable for grouping in parks and for forming backgrounds for other tall deciduous trees. The buds and young leaves exhale a pleasant balsamic odor. Partial to moist, sandy soils, succeeding especially well along watercourses.

22363. POPULUS SIMONII. **Poplar.** From F. N. Meyer, Shiling, Chihli, China. Forma *fastigiata.* One of the balsam poplars, the odor of which is particularly noticeable when the young leaves are developing. This form looks somewhat like the Lombardy poplar, but makes a more pleasing impression. Thrives in sandy soil. Hardy at Arnold Arboretum, near Boston, Mass.

34779. POPULUS SIMONII. **Chinese poplar.** From Angers, France, through Charles Detriche. Coming from south China, where the climate is warm and moist, this species may prove tender north of Georgia; although being deciduous, it deserves a wide trial to determine its range. It may prove to be adapted to cultivation south of the range of poplars in Florida.

26812. POPULUS SINENSIS. **Poplar.** From F. N. Meyer, Orianda, Crimea, Russia. Stately white-trunked tree, often attaining a height of 80 feet or more, with a remarkable pyramidal habit. Old trees branch out and lose their pyramidal shape. Of value in the Western States for windbreaks and as an ornamental park tree.

22861. POPULUS SUAVEOLENS. **White-barked poplar.** From F. N. Meyer, Wutaishan, Shansi, China. Grows at high altitudes and is valuable for sand binding. Frequently planted along ravines to prevent erosion and damage to lands below. Suggested for similar use and avenue planting in this country. The young bark of the tree is green.

39900. POPULUS SUAVEOLENS PRZEWALSKII. **Poplar.** Collected by F. N. Meyer near Kagoba, Kansu, China. Tall, stately tree with trunk of ashy-gray color, quite distinct from any of the common poplars; leaves large, somewhat grayish beneath. Found usually where soil retains its moisture; of value as an avenue or park tree for mild-wintered sections of the United States.

38255. POPULUS TOMENTOSA. **Poplar.** From F. N. Meyer, Wangyuko, Shensi, China. Rapid-growing form of white poplar, with whitish bark on the younger branches, becoming gray on the older ones. Forms tall, straight trunk when kept trimmed high. Wood light. Much planted by the Chinese for its timber and called by them *Ta pai yang shu* (big white poplar). May thrive in the southwestern part of the United States.

33206. POPULUS sp. **Chopo poplar.** From Pedro Giraud, Granada, Spain, at the request of W. T. Swingle, of the Bureau of Plant Industry. Remarkable form of poplar with true lateral branches almost completely absent, allowing very close planting. Rapid grower, producing large quantities of timber suitable for scaffolding or lumber for small packing boxes.

41564. POTENTILLA sp. **Cinquefoil.** From R. E. Cooper, Bhutan, India. Small hardy perennial, suitable for border planting or for use in rockeries. The leaves are covered with fine white hairs and form silver rosettes 4 inches across set with sprays of bright yellow flowers.

41260. PREMNA MICROPHYLLA. Ornamental, deciduous shrub collected by F. N. Meyer, Mokanshan, Chekiang, China. Bush 3 to 10 feet high, with glossy-green leaves resembling those of a lilac, and panicles of white flowers which later are supplanted by small black drupes. Thrives in semishady places. Of possible value as a hedge shrub for mild-wintered locations.

40857. PRIMULA LITTONIANA. **Primrose.** From Dr. C. Schneider, Arnold Arboretum, Jamaica Plain, Mass. A beautiful hardy Chinese primrose, with long flower spikes set thickly with bloom and rising 2 to 2½ feet. The small petals are a delicate lilac, and the calyces are a rich maroon. A remarkable effect is produced when the latter form a long point above a ruff of lilac blossoms.

17154. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Tchaching, China. A large red apricot of good quality. Budded on *Amygdalus davidiana.*

18260. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Peking, China. The kernel of this apricot is considered a fine nut by the Chinese, who eat it salted, after soaking it in water to get rid of the skin, using it in place of the almond, which is unknown in China. This is the " Chinese almond " of foreigners in China.

20072. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Liaoyang, Manchuria. A red apricot grown in the gardens of Liaoyang. It is of medium size and of very sweet flavor. Should stand the winters in the Great Plains region.

28956. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Askabad, Turkestan. A large orange-yellow apricot of sweet, melting taste, but slightly fibrous. Semiclingstone, with sweet kernels. Said to have come from Persia.

28962. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Orono, Zarafshan Valley, Province of Samarkand, Turkestan. A fine variety of apricot, of pale-yellow color, with firm but sweet, melting flesh, freestone, and having sweet kernels which are eaten like almonds.

32833. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Russian Turkestan. A native central Asian variety of apricot called by the natives *Bairam Ali.* Said to be of excellent quality. Grafted on *Amygdalus davidiana.*

32834. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Imperial Estate Murgab, Bairam Ali, Oasis of Merv, Russian Turkestan. A central Asian variety of apricot, called *Murgab.* Reported to be of fine quality. Budded on *Amygdalus davidiana.*

34269. PRUNUS ARMENIACA. **Apricot.** From Dr. Gustav Eisen, Rome, Italy. A very large, rounded-oblong apricot, without points, of orange color, ripens evenly all around; known as the *Crisomelo.*

38281. PRUNUS ARMENIACA. **Apricot.** A Chinese variety, collected by F. N. Meyer in the village of Tachingko, near Taianfu, Shantung, China. Said to be a variety with very large, yellow fruits, with strong red blush on one side, and sweet, juicy flesh. Chinese name *Ta shui hsing,* meaning " Large water apricot."

40012. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Lantsai, Kansu, China. Wild form collected in the mountains, 5,000 to 9,000 feet altitude. Boiled kernels, though somewhat bitter, are eaten by the natives. Of possible value in extending apricot culture farther north; also as a stock for stone fruits in semiarid regions and as a hardy spring-flowering park tree in the cooler parts of the United States.

40013. PRUNUS ARMENIACA. **Apricot.** From F. N. Meyer, Kwatsa, Kansu, China. Wild form of possible value as a hardy spring-flowering park tree in the cooler portions of the United States, as a stock for stone fruits in semiarid regions, and as a hardier strain capable of being grown north of the apricot belt proper.

33222. PRUNUS AVIUM. **Cherry,** var. *Garrafal.* From Pedro Giraud, Granada, Spain. Purchased at the request of W. T. Swingle, of the Bureau of Plant Industry. A giant cherry having firm, sweet flesh. Should be tried in the cherry regions of the Pacific coast.

33223. PRUNUS AVIUM. **Cherry,** var. *Garrafal le Grand.* From Pedro Giraud, Granada, Spain. Purchased at the request of W. T. Swingle, of the Bureau of Plant Industry. A large variety of cherry, possibly of French origin. Said to ripen in June. Should be tested in the Pacific coast cherry region.

PRUNUS CERASIFERA DIVARICATA. **Cherry plum.** Very beautiful, deciduous, roundheaded tree, from the Caucasus, up to 30 feet high, with nearly oval leaves, 1½ to 2½ inches long and half as wide. Flowers 1 inch across, solitary or crowded in dense clusters. The most beautiful of all true plums, being almost covered with pure white blossoms in March or April.

PRUNUS CONRADINAE. **Cherry.** Handsome tree, from western China, up to 40 feet in height, with the trunk 8 to 20 inches in diameter, thin, pale-green leaves, and white to deep-blush colored flowers, an inch or less across, which appear early in the spring. It is very similar to Sargent's cherry (*P. serrulata sachalinensis*).

32751. PRUNUS DOMESTICA. **Prune.** From Felix Wenger, Langenbuhl, Thun, Berne, Switzerland. This prune resembles the Italian, but is much larger and contains more sugar. It is locally known as the "grafted prune." To be tested in the northwestern section of the United States.

33224. PRUNUS DOMESTICA. **Plum,** var. *Ciruela de Fraile.* From Pedro Giraud, Granada, Spain. Purchased at the request of W. T. Swingle, of the Bureau of Plant Industry. Fruit said to ripen in June, and reported to be of excellent quality.

34267. PRUNUS DOMESTICA. **Papagone plum.** From Rome, Italy. Presented by Dr. Gustav Eisen, San Francisco, Cal. Fruits average 2½ by 1½ inches, often 3 by 1⅝ inches, elongate ovoid, greenish yellow, darker on shaded side; fine gray bloom; very thin, smooth skin; stalk short, one-half inch or less; seed very thin and remarkably small for size of fruit; flesh firm, sweet, and highly flavored.

34268. PRUNUS DOMESTICA. **Prune.** From Rome, Italy. Presented by Dr. Gustav Eisen, of the California Academy of Sciences, San Francisco, Cal. Called *Prunaringia*; grown near Naples. Fruit dark green, averaging about $2\frac{1}{2}$ by $1\frac{1}{2}$ inches, elongate ovoid. Very sweet and highly flavored. When ripe has one or more vertical slits on cheek. Can not stand long shipments, but should prove excellent for canning and preserving.

37645. PRUNUS GRAYANA. **Gray's bird cherry.** Presented by the director, Imperial Botanic Gardens, Petrograd, Russia. Small ornamental tree. Native of Japan, 20 to 30 feet high. Closely resembles the European bird cherry (*P. padus*), but has erect (not drooping) racemes of white flowers about 4 inches long. These appear in June and are followed by the black fruits in August.

34601. PRUNUS MIRA. Wild **Chinese peach.** From E. H. Wilson, of Arnold Arboretum. Thirty-foot tree, discovered north of Tachienlu, China, at an altitude of 9,000 feet. Fruit 1 inch in diameter; fuzzy, with smooth stone; edible. Shows tendency to bloom late in the spring; may prove useful for breeding purposes or as stock. Apparently hardy in Massachusetts and in northern Florida.

28685. PRUNUS MUME. **Japanese apricot.** From Yokohama, Japan. These belong to the Ume class of Japanese plums and are quite different from European and American varieties. The fruit is exceedingly sour, and is largely used in Japan in the form of pickles. The leaves of *Perilla arguta* are pickled with the fruit and give it a reddish color.

PRUNUS PROSTRATA. **Bush cherry.** Native of Turkestan and the Levant. An exceedingly variable shrub ranging from a close stunted bush to a rather free-growing plant 8 feet or more high. Flowers so profusely as to make it of value as an ornamental. The rather small red fruits are sour, but vary greatly in size and flavor. Should be tested for hardiness and as a factor in hybridization work.

18587. PRUNUS PSEUDOCERASUS. **Tanghsi cherry.** From F. N. Meyer, Chekiang, China. A distinct species of fruiting cherry, which though not hardy, deserves study by horticulturists; the true *Prunus pseudocerasus* (a name erroneously applied to the Japanese flowering cherry). Ten days earlier than the earliest variety yet fruited in California. Fruit size of the *Early Richmond*. Unusually vigorous. May make excellent stock.

PRUNUS SERRULATA. The flowering cherry tree of Japan. There are hundreds of varieties of these loveliest of spring-flowering trees for parks and gardens. Peculiarly adapted to positions near houses, where they can be studied closely. Only the upright-growing, double-flowered, and large single-flowered forms belong to this species. Blossoms borne in great masses, vary greatly in size and in color. Fruits small and scarcely edible.

26886. PRUNUS SIMONII. **Apricot plum.** From F. N. Meyer, Dongsi, China. A fruit that looks like an apricot; very fragrant; sour; with downy, dull-yellow skin, rather small in size.

32669. PRUNUS SPINOSA × DOMESTICA. **Plum.** From Kozlov, Russia, through F. N. Meyer. A hybrid between *P. spinosa* and *P. domestica*, Green Reine Claude variety, originated by I. V. Mijurin at Kozlov. Named by him *Bjeli tjorn*, "White sloe." Fruits almost round, medium size, yellowish white, of good keeping qualities. Trees of medium size, slow growers, but heavy bearers, exceptionally hardy.

32670. PRUNUS SPINOSA × DOMESTICA. **Hybrid plum.** From Kozlov, Russia, through F. N. Meyer. Hybrid produced by the plant breeder I. V. Mijurin between the Green Reine Claude and *P. spinosa*, a hardy spiny bush of Europe, Persia, North Africa, and Siberia. Fruits dark purple, small, sweet, and characteristically spicy. Good keeping qualities. On *Amygdalus davidiana* stock.

32671. PRUNUS SPINOSA × DOMESTICA. **Hybrid plum.** From Koslov, Tambov Government, Russia, through F. N. Meyer. Hybrid between the Green Reine Claude plum and *P. spinosa*, originated by I. V. Mijurin at Koslov. Fruits dark purplish, medium in size, very sweet flavor and aftertaste all their own. Trees very productive and vigorous.

32673. PRUNUS SPINOSA × DOMESTICA. **Hybrid plum.** From Kozlov, Russia, through F. N. Meyer. Hybrid produced by I. V. Mijurin, the Russian plant breeder, between the Green Reine Claude and *P. spinosa*. Medium-sized fruit of beautiful yellow color; spherical shape; sweet, spicy, and juicy; of good keeping quality. Tree medium sized, very healthy, cold resistant. On *Amygdalus davidiana* stock.

PSIDIUM GUAJAVA. **Guava.** Well-known tropical fruit, generally utilized for jellies and preserves. Large shrubs with white flowers and round or pear-shaped fruits, 2 to 3 inches in diameter, containing many small hard seeds. The flesh is sweet and of a musky flavor. Stands very little frost.

42876. PSORALEA GLANDULOSA. **Culen.** Presented by Señor Don Ernesto Palacios, Santiago, Chile. A medicinal legume found growing along river banks and said to reach a height of 5 to 15 feet. Listed in the Mexican Pharmacopœia as a tonic; also said to be used as a vermifuge. The leaves are much used in Chile in the preparation of a popular beverage called " aloja."

38427. PTEROCARYA FRAXINIFOLIA. From A. Woeikoff, Novospassko, Russia. An ornamental deciduous tree, related to the walnut. Grows rapidly and attains a height of 60 feet, with spreading branches and graceful, dark green foliage. A native of northern Persia, and hardy in the United States as far north as Massachusetts.

PUNICA GRANATUM. **Pomegranate.** Evergreen shrub with attractive, usually scarlet flowers, and large round fruits. The skin is leathery and incloses a large number of small seeds, each surrounded by a layer of pink acidulous pulp, eaten out of hand or used to prepare a refreshing drink. Flavor vinous, very pleasant. Its rind contains tannin and is used in the manufacture of morocco leather.

21983. PYRUS CHINENSIS. **Chinese pear.** From F. N. Meyer, Boshan, Shantung, China. A wild pear called *Tangli* by the Chinese. Small, oval, russet pear, heavily dotted; flesh crisp and sweet, but rather flat; stem long and slender; fruit full at stem end; neck short; basin at flower end deep and narrow. May be valuable for breeding purposes. Resistance to blight unknown.

30329. PYRUS CHINENSIS. **Chinese pear.** From F. N. Meyer, Khotan, Chinese Turkestan. A celebrated eastern Asiatic pear. Fruit medium large, nearly oval, canary yellow, with slight reddish blush; flesh granular; taste fresh, sweet, and remarkably juicy. Of excellent keeping and shipping qualities. To be tested in desert regions under irrigation.

30351. PYRUS CHINENSIS. **Chinese pear.** From F. N. Meyer, Yarkand, Chinese Turkestan. Called *Nanshi'pt.* Fruits rather large, greenish yellow, somewhat blotched with greenish patches; flesh granular, but melting when fully ripe; fresh, sweet taste; late ripener; can be kept for several months. Stands extremes of temperature well. To be tested under irrigation in desert regions.

30360. PYRUS CHINENSIS. **Chinese pear.** From gardens of Swedish missionary, Kashgar, Chinese Turkestan, through F. N. Meyer. Small pear of angular shape called *Kuttera amoot.* Bright yellow; flesh soft, melting, of good flavor; not a good keeper; ripening in early August and keeping only a few weeks. Tree of spreading growth, requiring considerable space.

43444. PYRUS CHINENSIS × COMMUNIS. **Hybrid pear.** Hybrid of Chinese and European varieties produced by Dr. Walter Van Fleet at Little Silver, N. J. Varietal parentage doubtful. Large roundish, oblate short neck, rough skin variety. Flesh coarse, but sweet and juicy. If resistant to pear blight, may have promise commercially. Ripens in early October.

32735. PYRUS COMMUNIS. **Herzogin Elsa pear.** Presented by Rev. John B. Katzner, Minnesota State Horticultural Society Trial Station, Collegeville, Minn. A pear of German origin reported to be "a prolific variety of good growth, large fruit, very good quality, useful for dessert. Ripe in September." Proved tender in Minnesota, but deserves to be fruited in milder pear regions.

32738. PYRUS COMMUNIS. Known as the **Magdalene pear.** Presented by Rev. John B. Katzner, Minnesota State Horticultural Society Trial Station, Collegeville, Minn. Reported "vigorous and very prolific. Small fruit of very good quality, suitable for dessert. Ripe from July to August." Procured from Germany. Did not prove hardy in Minnesota, but deserves to be fruited in milder regions.

33207. PYRUS COMMUNIS. **Pear.** From Pedro Giraud, Granada, Spain. **Favorita** variety; very large pear, with lemon-yellow, buttery flesh, sweet and savory. It ripens the middle of August. Not yet fruited in America. Distributed to find climatic requirements.

33208. PYRUS COMMUNIS. A Spanish **pear** known as the **Pera de Rosetta.** Purchased from Pedro Giraud, Granada, Spain, through Walter T. Swingle, of the Bureau of Plant Industry. This variety is reputed to be of excellent quality, but has not yet been fruited in America.

26485. PYRUS sp. **Pear.** From Edward C. Parker, Mukden, Manchuria. A popular pear among the Chinese, of medium size, coarse, yellowish white flesh. Flavor indifferent, keeping qualities excellent. Tree very hardy, resistant to droughts and high, drying winds. Recommended for trial beyond the usual northern limit for European pears, for fruit, and as a stock.

29050. PYRUS sp. **Pear.** From Edward C. Parker, Mukden, Manchuria. These varieties from Kwangning district are very resistant to drying winds, sun scald, blight, etc. Recommended as a hardy grafting stock for improved varieties. Probably represents several varieties.

37071. PYRUS sp. **Pear.** From Dr. Yamei Kin, Tientsin, China. Reported to be a very large pear with fine white flesh and good flavor. Well-grown fruits said to weigh two-thirds of a pound. Chinese name of variety *Pan chin.*

40865. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A cultivated form collected in Talifu market. The fruit is said to be yellow with brown points, 2¾ inches long by slightly over 3 inches broad. Not yet fruited in America. From a mild temperate climate.

40866. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A cultivated form collected in Talifu market. The fruit is light brown, flushed with red, 2¾ inches in diameter. Not yet fruited in America. From a mild, temperate climate.

40867. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A cultivated form collected in Talifu market. The fruit is yellow, with brown points, 2¾ inches long by 4 inches broad. Not yet fruited in America. From a mild, temperate climate.

40868. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A cultivated form collected in Talifu market. The fruit is said to be yellow with red blush, and numerous fine, dark points, 2¾ inches long by 3 inches broad. Not yet fruited in America. From a mild, temperate climate.

40869. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A cultivated form collected in Talifu market. The fruit is said to be russet, 2¾ inches long by 3¼ inches broad. Not yet fruited in America. From a mild, temperate climate.

40870. PYRUS sp. **Pear.** From Dr. Camillo Schneider, Talifu, Yunnan, China. Cultivated pear obtained in the markets of Talifu. The yellow and red fruit is said to be 2¾ inches long by 3½ inches broad. Not yet fruited in America. From a mild, temperate climate.

39723. QUERCUS INSIGNIS. **Mexican white oak.** From C. A. Purpus, Zacuapam, Vera Cruz, Mexico. A rapid-growing tree, very different in habit from most oaks. Is quite erect, reaches a height of 75 feet, and sends out large branches 30 or 40 feet above the ground. It is best suited to a moist, warm climate. Acorns of most unusual size.

41810. RANDIA ACULEATA. **Ink berry.** From Carlos Wercklé, San Jose, Costa Rica. Beautiful, small-leaved shrub or small tree with white flowers resembling those of the common jasmine. The berries yield a permanent blue dye. The wood is very tough and is said to have been used for arrows by the Indians. Widely distributed through the West Indies.

41495. RANDIA sp. Ornamental shrub. Presented by Carlos Wercklé, Orotina, Costa Rica. Shrub or small tree with whitish or yellowish flowers, somewhat resembling Gardenia. Of possible value as a hedge plant in the Southern States.

41030. RAPHANUS SATIVUS. **Radish.** From C. H. Deal, Songdo, Chosen (Korea). A long, white, winter radish of excellent quality; not pithy inside and with a flavor equaling our spring radishes. Eaten raw or cooked like turnip. Matures in 6 or 8 weeks. Soil used is disintegrated granite lightly fertilized.

36735. RHAMNUS sp. **Buckthorn.** From Yingtauko, China, through F. N. Meyer. A small-foliaged species, having large, jet-black berries. This shrub does not grow tall, but is densely branched and assumes a well-rounded form when not mutilated. Of value as a garden and park shrub, and for medium-sized hedges, especially for the drier sections of the United States.

39433. RHAMNUS sp. **Buckthorn.** From F. N. Meyer, Kulo, Shansi, China. Tall shrub or small tree of spreading habit, apparently rare; found occasionally in loess banks. Seems able to withstand considerable alkali. Of value as a park shrub or possibly as a hedge plant in drier sections of the United States. Berry, purplish black, apparently not edible.

37384. RHEEDIA EDULIS. **Limão do Matto.** From Lavras, Minas Geraes, Brazil, through Dorsett, Shamel, and Popenoe. Tree 20 feet high with deep-green glossy foliage, and thick-skinned fruit, 2 inches long, having snowy-white pulp with acid flavor, resembling the mangosteen in appearance and the lansium in taste. Makes superior sweetmeats. Related to the mangosteen. Try as a stock.

RHODODENDRON ARBOREUM. Indian ornamental tree, from L. J. Mackintosh, Darjiling, India. Attains height of 25 feet. The large, dark crimson or pink flowers borne in profusion from April to July, render it conspicuously beautiful as a lawn or park shrub. Leaves said to be used medicinally for headaches. The flowers have an agreeable, sour taste and are said to make a good subacid jelly.

39053. RHODODENDRON ARBOREUM CAMPBELLIAE. From L. J. Mackintosh, Darjiling, India. One of the handsomest varieties of *R. arboreum*. Small evergreen tree, reaching 30 to 40 feet in height, with purplish rose flowers, 1½ to 2 inches across, borne in compact heads, 4 to 5 inches through. Leaves reddish beneath. A tender species, but of considerable value as an ornamental in the Southern States.

38413. RHODODENDRON DAURICUM. An early flowering Rhododendron. From A. Woeikoff, Novospassko, Russia. Deciduous or semievergreen shrub up to 6 feet high with bright, rosy-purple flowers, 1 to 1½ inches across. It is the earliest of rhododendrons to flower, blooming in January or February. Not hardy in the North.

RHUS JAVANICA. **Sumac.** Collected by F. N. Meyer, Kansu, China. The most showy of sumacs when in bloom. Late-flowering (August to September), tall shrub or flat-topped tree with large, light-green, compound leaves with winged stalks; and creamy-white flowers in large, broad panicles which are followed by deep-red, compressed, hairy fruits. These are covered with a sticky, whitish wax which burns readily.

32390. RHUS LANCEA. From J. Burtt Davy, Pretoria, South Africa. The **karree boom** of southwestern Transvaal and adjacent Bechuanaland. Valuable hardwood tree with odd-pinnate leaves; for regions of limited rainfall, 10 to 15 inches in winter. Fruits are edible. Can be grown from poles in same manner as willows. Belongs to the sumac family (Anacardiaceæ).

40717. RHUS POTANINI. **Sumac.** Collected by F. N. Meyer in mountains near Kuanyintang, Shensi, China. Tall shrub or sometimes tree, 60 feet high. Foliage brilliant in fall. A gall insect produces large, inflated galls called "gall nuts," utilized extensively for black dye, great quantities being exported from Hankow. Cultivation on cheap land might be attempted. Has weedy tendencies,

37621. RIBES ALPINUM. **Mountain currant.** From R. Irwin Lynch, curator, Botanic Garden, Cambridge, England. A deciduous, unarmed shrub, 6 to 9 feet high, of dense, close habit. Leaves broadly ovate, 3 to 5 lobed, shining on the under surface, ½ to 1½ inches long. Currants red, not edible. Although it has no special beauty of flower or fruit, it makes a neat, pleasing hedge shrub for cold regions, admirable for shady places.

RIBES NIGRUM. **Black currant.** A collection of 16 different varieties of this fruit, which ranks among the hardiest of all small fruits for extreme northern localities. In England black currant jelly and jam appear to be more keenly appreciated than they are in America. These various imported varieties were furnished by W. H. Fairfield, of the Canadian Government Experiment Station, at Lethbridge, Alberta.

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39593. ROSA GIGANTEA. From E. D. Sturtevant, Hollywood, Cal. A rampant climber with usually unarmed flowering branches and solitary white to lemon-yellow, single flowers, 5 to 6 inches across. Leaflets usually five, nearly oval, smooth, and firm. Fortune's Double Yellow is said possibly to have arisen from crosses with this rose or to be a variety of it. Quite tender except in the South. Too large for greenhouses.

29729. ROSA GIGANTEA × (?). **Belle Portuguoise rose.** Several remarkable hybrids have been made between the giant climbing rose of Burma and other cultivated varieties. This one is from the Lisbon Botanic Garden, without data as to parentage. In California it has proven exceedingly vigorous and produces in profusion extremely large, creamy white, double blooms, rose tinted. Doubtless tender. Easily broken by winds.

40193. ROSA SERTATA. **Rose.** Presented by the director, Royal Botanic Gardens, Kew, England. Shrub of trim habit, 5 feet or more high, with graceful, slender branches bearing small, gray-green leaves composed of 7 to 11 sharply-toothed leaflets; delicate purplish-red flowers and deep red, egg-shaped hips. Very dainty rose allied to *R. webbiana* and *R. willmottiae*. Native of Central China. Introduced at Kew by E. H. Wilson in 1907.

40699. ROSA SWEGINZOWII. **Rose.** Collected by F. N. Meyer near Sanszemiau, Kansu, China. A wild rose resembling *Rosa hugonis* in habit; of very vigorous growth and possessing remarkably broad spines, which vary much in size and number on various specimens. Bush 5 to 10 or more feet high. Flowers deep rose color. Found on rocky mountain slopes at 5,000 to 8,000 feet altitude. Possibly of value in hybridization experiments.

40595. RUBUS IRENAEUS. Shrubby Chinese Rubus. Presented by Vicary Gibbs, Elstree, Herts, England. One of the most striking and remarkable of the simple-leaved forms. The evergreen foliage suggests coltsfoot in size and shape, but has a curious metallic luster on the upper surface. Stems prostrate, covered with dense, gray down; flowers white. Suitable as covering for semi-shaded slopes. Fruit large, red.

39187. RUBUS ROSAEFOLIUS. From G. Regnard, Port Louis, Mauritius. Yellow-fruited variety. This is very scarce, probably because it is planted with or near the red form with which it becomes cross-fertilized and the red predominates. Should be planted in sheltered or shady position in deep, rich soil. Requires considerable watering.

22987. SAGERETIA THEEZANS. From F. N. Meyer, Soochow, Kiangsu, China. Shrub, almost evergreen, with small, nearly oblong leaves less than an inch long, bearing numerous short panicles one-half to 1 inch long, of very small white flowers and small, sweet, edible fruits. Leaves are said to be used like tea. Grown rarely as dwarfed tree in pots. Chinese name *Chuck mei tsang.* Belongs to Rhamnaceæ or buckthorn family.

26762. SALIX BABYLONICA. **Willow.** From F. N. Meyer, estate of Maximof, Crimea, Russia. A willow with golden yellow twigs which are very pliable. The tree is used for hedges and windbreaks; for the drier parts of the United States where the winters are mild.

28710. SALIX CHILENSIS. **Willow,** var. *Fastigiata;* the Chilean castilla. From Jose D. Husbands, Limavida, Chile. A very tall, straight tree with branches growing up close to the trunk, like a well-trimmed poplar. Found growing in arid clay soils. Distributed heretofore as *S. humboldtiana.* Useful for avenues and narrow streets. Injured by a temperature of 16° F.

33135. SALIX FRAGILIS PENDULA. **Weeping willow.** From Dr. L. Trabut, Mustapha, Algiers. An ornamental, weeping form of the brittle willow; probably suited best for trial in California and the southwest. These cuttings may be from a male plant.

22450. SALIX MATSUDANA. **Willow.** From F. N. Meyer, Pautingfu, China. Strong-growing bush of upright habit, with smooth, greenish branches tinged with yellowish red. Occurs on dry lands in North China, requiring no water beyond the scanty summer rainfall.

17737. SALIX sp. **Willow.** From F. N. Meyer, Schahoschon, China. Remarkable ornamental willow, forming naturally dense, flat-globular heads, but of upright growth when planted in hedges. The branches are long, slender, and tinged with red toward the tips.

29143. SALIX sp. **Willow.** From F. N. Meyer, Guldscha, Russian Turkestan. A moderate-sized, hard-wooded tree with long, very narrow leaves and reddish twigs. Of value for windbreaks and as an ornamental garden and park tree in alkaline sections of the United States. The young twigs are very pliable and may be employed as a tying material.

38233. SALIX sp. **Willow.** From F. N. Meyer, Tongjapu, Shensi, China. A tall, heavy-trunked tree with the main branches of erect growth and dark-green color, but the young branches slender, gracefully pendulous, of delicate yellow color. A splendid park tree for planting singly or in clumps.

38238. SALIX sp. **Willow.** From F. N. Meyer, vicinity of Chaoyihsien, Shensi, China. Willow of widely spreading habit, forming a strikingly well-rounded head as it matures, this being a marked characteristic. Apparently able to withstand considerable drought and comparatively large amounts of alkali.

SCHIZOPHRAGMA HYDRANGEOIDES. Climbing ornamental shrub which will attach itself to a rough wall almost as effectively as the Virginia creeper. Its almost white flower clusters resemble somewhat those of the hydrangea, being produced in broad, flattish inflorescences, 8 to 10 inches across. These stand out in pleasing contrast against the dark-green, heart-shaped foliage. Native of Japan.

42824. SIDEROXYLON DULCIFICUM. From R. H. Bunting, Aburi, British West Africa. Edible-fruited shrub, 6 feet high, related to the sapote and sapodilla of the American Tropics. The fruits when ripe and fresh are said to be singularly sweet and to possess the peculiar property of imparting a sweet taste to anything bitter or sour (as quinine, lime juice, etc.), if eaten immediately afterwards. Native of western tropical Africa.

37703. SINDORA SUPA. From P. J. Wester, Lamao, Bataan, Philippine Islands. A caesalpiniaceous tree 60 to 90 feet high, with compound leaves usually composed of three pairs of leaflets. The wood is heavy, hard, fairly durable, slightly cross-grained, and rather difficult to work. Used in house, bridge, and naval construction, furniture, and cabinetmaking. This tree is also the source of "supa oil." Native of Mindoro and Luzon.

SOLANUM MURICATUM. **Pepino.** Erect, half-shrubby plant producing an aromatic fruit the shape of an egg, yellow or whitish, with purple blotches. The yellow flesh resembles that of a ripe pear in texture and is said to resemble a blend between a pear and a cantaloupe in flavor. Unripe fruits are sometimes eaten cooked like pumpkins. The ripe fruits form a very good salad. Will stand very little frost. The fruits are generally seedless.

SOPHORA DAVIDII. A thorny Chinese leguminous shrub, up to 5 feet high. Sometimes used as a hedge plant. Foliage grayish green, flowers whitish lilac, pods produced in immense quantities. Of possible use as a bee plant.

39421. SOPHORA TOMENTOSA. From J. T. Roig, Cuban Agricultural Station, Santiago de las Vegas, Cuba. Very ornamental leguminous shrub, with handsome, shining, dark-green, odd-pinnate leaves and narrow panicles of sulphur-yellow pea-shaped flowers. Forms wide masses and is suitable for planting around houses and in gardens. A littoral species, cosmopolitan within the Tropics.

THE IMBU (SPONDIAS TUBEROSA), A FAVORITE BRAZILIAN FRUIT.

Messrs. Dorsett and Popenoe found the imbu growing in semiarid situations in the interior of Brazil. It produces large crops of plumlike fruits which have a pleasant acid taste and are eaten fresh or mixed with milk to form a refreshing drink. Photographed (P14775FS) by P. H. Dorsett, at Januaria, Brazil, February 13, 1914. (Natural size.)

THE KAFIR-ORANGE (STRYCHNOS SPINOSA), S. P. I. No. 9611.

It is not an orange at all, and its seeds contain bare traces only of strychnine instead of poisonous quantities as do the seeds of its relative, *Strychnos nux-vomica*. When ripe, it resembles a yellowish-green cannon ball, has a shell that must be cracked with a hammer, and has so strong a fragrance of cloves that it scents the room; its flavor, though hard to describe, reminds one of ripe bananas and candied peaches. Deserves to be further studied by horticulturists in Florida and California. Fruit from the Miami Garden. Photographed (P7911FS) April 4, 1911.

SPATHODEA CAMPANULATA. Handsome ornamental flowering tree, related to the catalpa, 40 to 60 feet high, erect. Leaves resemble those of black walnut. Large, orange-red flowers are produced in clusters at the ends of the branches. Native of western tropical Africa, but cultivated to a considerable extent throughout the Tropics as an ornamental shade tree. Petals develop in a liquid which spurts out when buds are pricked.

SPONDIAS CYTHEREA. **We fruit,** of the Pacific islands. Small deciduous tree of rapid growth, producing richly-colored yellow fruits, 2 inches in diameter, with brownish yellow flesh somewhat resembling the pineapple in flavor. Easily propagated from cuttings. Suitable for planting in southern Florida and California. Of the same family as the mango and related to the hog plum (*S. lutea*).

SPONDIAS TUBEROSA. **Imbú.** Medium-sized tree, from the dry lands of eastern interior Brazil, branching 4 to 6 feet above ground, forming a broad, flat-topped, dense head and producing golden-yellow, plumlike edible fruits, flavored somewhat like a sweet orange. Large limbs, when freshly cut and used for fence posts, frequently take root and grow. (Pl. XV.)

42729. STIGMAPHYLLON sp. **Bejuco de sapo.** From H. M. Curran, San Martin de Loba, Colombia. Ornamental woody vine bearing a profusion of yellow flowers in stalked axillary clusters, followed by purple-tinted fruits. Another species, *S. ciliatum*, is said to be one of the best medium-sized vines for outdoor trellis work. Tender; native of tropical America.

STRYCHNOS SPINOSA. **Kafir orange.** Remarkable East African shrub or small tree with evergreen foliage and short spines. Bears large, round, green fruits with extremely hard shells. When these ripen they turn yellow and scent the room with the fragrance of cloves. The seeds have a small amount of strychnine in them. The flesh is edible, reminding one of a brandied peach. (Pl. XVI.)

39334. STRYPHNODENDRON BARBATIMAM. **Barbatimão.** From Benjamin H. Hunnicutt, Lavras, Minas Geraes, Brazil. Small, unarmed, leguminous tree, with acacialike foliage and small sessile flowers borne in axillary cylindrical spikes. Timber very strong and durable, used for external work in damp places, as well as for cabinetwork. Bark contains up to 40 per cent of tannin; used for tanning and for various medicinal purposes.

38541. STYLOMA PACIFICA. **Fan palm.** From the Belize Botanical Station, Belize, British Honduras, through O. F. Cook. A spineless fan palm up to 30 feet high, with exceptionally soft and pliant leaves having the blades wedge shaped in outline. This species is remarkable for its fibrous, fluffy leafstalks. Known heretofore as *Pritchardia pacifica.*

38542. STYLOMA THURSTONI. **Fan palm.** From the Belize Botanical Station, Belize, British Honduras. A handsome fan palm without spines. The pliant soft leaves are reported to be very beautiful. This species is distinguished from others of the same genus by its very long slender flower stalks like fishing rods, bearing a thyrselike inflorescence. Known heretofore as *Pritchardia thurstoni.*

SWIETENIA MAHAGONI. **True mahogany.** Tree of the family Meliaceæ, attaining great height and a diameter up to 6 feet. Furnishes the hard, dark-red wood of well-known commercial value. This species occurs wild on the keys or islands south of the Everglades and grows on hot coral rock on the seacoast of Florida, often within reach of the salt spray.

38498. SYNECANTHUS sp. **Uchul palm.** From O. F. Cook, Senahu, Guatemala. Slender, graceful, pinnate-leaved palm, reaching 15 feet in height, with large, open inflorescences bearing beautiful bright-red fruits the size of a cherry. Grows in cool, damp, mountain-side forests in the Senahu districts at altitudes of 2,000 to 4,000 feet.

38828. SYRINGA AMURENSIS. **Lilac.** From F. N. Meyer, Tahuashan, Shensi, China. A tree found in great masses on rocky mountain slopes at altitudes of 3,000 to 5,000 feet. Of value as a stock for standard lilacs and for hybridization purposes. Attractive when in flower and useful as a hardy shrub.

40709. SYRINGA sp. **Lilac.** Collected by F. N. Meyer near Palitang, Kansu, China. Small bush 3 to 5 feet high, with small leaves. Apparently very floriferous. Found with *Amygdalus davidiana* covering loess slopes at altitudes of 3,500 feet. Of value as a hardy flowering shrub for the dry and cool sections of the United States.

34804. TAMARIX PENTANDRA. **Tamarisk.** From Novospassko, Syzran-Riazan Ry., Russia, through F. N. Meyer. The facts that the tamarisk can withstand unusual amounts of alkali, is cold resistant, and branches near the ground, makes it an excellent plant for windbreaks. It can be easily propagated by cuttings. This species from Russia is recommended for the Great Plains.

22867. TAMARIX sp. From near Taiyuanfu, Shansi, China, through F. N. Meyer. Extremely rapid-growing tree or shrub, branching close to the ground, making excellent windbreaks and even hedges. One of the most drought and alkali resistant of all plants; cuttings put in ground just after rain grow easily. Recommended for south side of wind belts on the Great Plains.

29149. TAMARIX sp. **Tamarisk.** From F. N. Meyer, Ulukshat, Chinese Turkestan. Ornamental tree with minute, scalelike, light-green leaves and large racemes or terminal panicles of small, usually light-pink flowers. Low-growing tamarisk found on sandy and alkaline level places at altitudes of 7,000 to 8,000 feet. Arrests blowing sands very well and is recommended for this purpose in the cooler sections of the United States.

35261. TAMARIX sp. From F. N. Meyer, Laoling, Shantung, China. A tamarisk occurring on sandy and alkaline lands. The Chinese call it *Hong ching*, and cut twigs every autumn for baskets. Possesses considerable bank and sand binding qualities and should be tested for these purposes in the drier sections of the United States.

TERMINALIA CATAPPA. **Tropical** (or **Malabar**) **almond.** Handsome ornamental shade tree, bearing edible almondlike fruits. Its large, shining, obovate leaves are borne in rosettes at the ends of the whorled horizontal branches. Evergreen in the Tropics, but in the subtropics it loses its leaves, which assume gorgeous tints of yellow, red, scarlet, and purple before falling. Wood hard, of reddish color. Widely distributed throughout the Tropics.

36016. TERMINALIA EDULIS. **Columpit.** From P. J. Wester, Lamao, Bataan, Philippine Islands. Large, attractive fruit tree, with well-rounded, open crown, affording half shade. Fruits are edible, ripening in June and July, larger than a cherry, of dark red color and fleshy, with a subacid flavor.

30913. THESPESIA GRANDIFLORA. **Maga.** Tree of mallow family, introduced by Dr. J. Gifford from Porto Rico, where it grows 50 feet high with straight trunk. Timber fine, hard, rose colored when fresh, black when old. Good lasting qualities. Flowers very large, bell shaped, rosy crimson, extremely striking and ornamental. Promises to become one of finest ornamentals in southern Florida.

38797. THUJA ORIENTALIS. **Chinese arbor vitæ.** A remarkable form of somewhat flattened, globular shape and of very dense growth, collected by F. N. Meyer near Chaoyihsien, Shensi, China. Reported to be a rare form well suited for mild-wintered, semiarid regions.

TIPUANA TIPU. Handsome South American timber tree, related to the locust (*Robinia pseudacacia*), which it somewhat resembles in foliage and flower (the latter, however, are either bright yellow or purplish); tall and straight trunked. Wood rose color to creamy white, rather soft. It is also said to yield a very fine red rosin. Reported to be a fine ornamental. Native of Argentina.

40029. TRACHYCARPUS EXCELSUS. **Palm.** From F. N. Meyer, Huihsien, Kansu, China. A Chinese fan or coir palm, cultivated in gardens of southern Shensi and Kansu as an ornamental, reaching a height of 30 to 40 feet. Withstands successfully winter temperatures not below 10° F. The leaves are not used, but the fiber of the foliage sheaths is made into rope, matting, etc.

41871. TRACHYCARPUS TAKIL. **Fan palm.** From A. C. Hartless, Seharunpur, India. A lofty Himalayan palm, 40 to 50 feet high, of slender and stately appearance. It much resembles the somewhat smaller Chinese Windmill palm (*T. excelsus*), which has been planted extensively in California. Found at altitudes up to 8,000 to 10,000 feet in the western Himalayas. Fruits are said to be edible.

36118. TRICHOSANTHES KIRILOWII. **Gourd.** From F. N. Meyer, Peking, China. A rare, perennial, herbaceous, climbing cucurbit, producing medium-sized orange-red fruits on long peduncles. Of rapid growth and of value as a vine for porches, arbors, and summerhouses. The fruits are used by the Chinese as a medicine, *Kua lu.*

32829. ULMUS DENSA. **Stamboul elm.** From F. N. Meyer, Oasis of Merv, Russian Turkestan. Large tree with exceedingly dense, umbrella-shaped head, formed by the many-forked, often corky, winged branches. Said to be a valuable shade tree for regions with hot summers and mild winters. Thrives fairly well on alkaline soil.

32830. ULMUS DENSA. **Kitaisky elm.** From Oasis of Merv, Russian Turkestan, through F. N. Meyer. Ornamental tree with globular head when young, but becoming picturesque when old. Strong grower, requiring plenty of room. Called locally *Kitaisky*, indicating possible Chinese origin. Stands extreme heat and some alkali. Worthy of trial in the Southwest and on the Great Plains with the American elm.

32831. ULMUS DENSA. **Charavidny elm.** From F. N. Meyer, Oasis of Merv, Russian Turkestan. Divides into several stems immediately above the ground, forming a remarkably dense umbrellalike head. Valuable shade tree for regions with long, hot summers and winters not too cold. Thrives fairly well on alkaline soils. Distributed heretofore as *Ulmus* sp.

ULMUS PUMILA. **North Chinese elm.** Shade and timber tree, remarkably resistant to droughts, alkali, and severe extremes of temperature. Timber used in China mainly in manufacture of carts. Of exceptional promise as a shade tree for the semiarid regions of the United States, where it has made phenomenal rapid growth. Deserves trial in shelter belts of the Northwest.

ULMUS VEGETA. **East Anglian elm.** A hybrid between *U. montana* and *U. nitens*, and like many hybrids, of remarkably vigorous growth. One of the largest of all elms, reaching 100 feet in height, forming a short, thick trunk 5 to 6 feet in diameter; forks low and sometimes splits if not properly pruned. Originated in 1836, in the nursery of John Wood, Huntington, England.

34063. ULMUS sp. **Karagatch elm.** From the Truckee-Carson Field Station, Fallon, Nev. Grown from seeds collected by Arthur P. Davis in Bairam Ali, Russian Turkestan. Rapid-growing elm, well suited to semiarid regions; has much harder and better wood than the American elm and is as good or better for windbreaks and shade in arid regions.

40198. VIBURNUM LOBOPHYLLUM. Presented by the director, Royal Botanic Gardens, Kew, England. Deciduous ornamental shrub with dark, reddish brown branches and flat-topped clusters of small white flowers. The bright-red fruits, one-third of an inch long, are ripe in September and October and form the chief attraction of this shrub. Native of western China. Introduced by E. H. Wilson in 1901.

22978. VIBURNUM MACROCEPHALUM. **Giant Chinese snowball.** From Soochow, Kiangsu, China, through F. N. Meyer. A tall bush, bearing very large umbels of white flowers, attaining sometimes a foot in diameter. Employed by the Chinese extensively as a dooryard shrub; often dwarfed by grafting on the wild form and grown in tubs. A very showy shrub. Probably not hardy in the North.

40901. VIGNA SESQUIPEDALIS. **Yard-long bean.** From China. Collected by F. N. Meyer. A variety said to be unusually elongated. Much used by the Chinese as a garden vegetable, eaten either fresh, dried, salted, or pickled. Should be supported to give maximum returns.

21976. VITEX INCISA. From F. N. Meyer, Shantung, China. Tall perennial, growing on dry alkaline lands, with delicate blue flowers appearing in terminal panicles and rich in honey. Annual shoots occasionally used by the Chinese in basket manufacture. Recommended for testing as an ornamental in the Southwestern States.

41877. VITIS DAVIDII. **Grape.** From central China. Presented by Mrs. A. Anderson, Shanghai, China. Luxuriant, deciduous, ornamental climber with soft spines. Fruit said to be about two-thirds of an inch in diameter, black, and of pleasant flavor. Its adaptability to tropical climate and apparent disease resistance suggest possible value in production of hybrid grapes suited to the southern Atlantic States. (Pl. XVII.)

41707. VITIS TILIAEFOLIA. **Mexican grape.** From Dr. C. A. Purpus, Zacuapam, Vera Cruz, Mexico. A tropical species of vine with very sour fruit, which is said to make a most excellent jelly, resembling that from currants. Found growing in sunny places in brush woods. Suggest crossing with *V. vinifera* and North American species to produce varieties of table grapes for the Tropics.

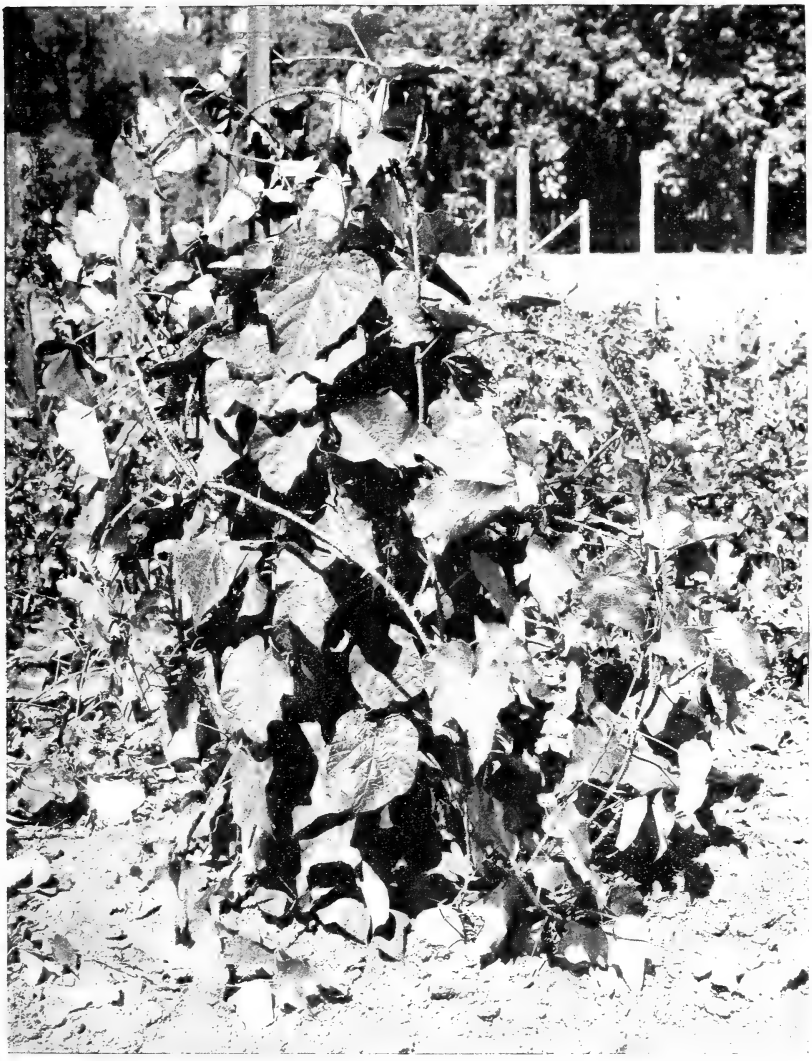
41775. YUCCA ANGUSTISSIMA. Presented by Ben Johnson, Utah Rare Plant Co., Salt Lake City, Utah. A very narrow-leaved species, the white-bordered, sharply pointed leaves being only three-fourths to 2 inches wide and 8 to 15 inches long. The pure-white, bell-shaped flowers are arranged in a branched inflorescence 3 to 5 feet long. Native of southeastern Utah, southwestern Nevada, and northwestern Arizona in the region of the Colorado River.

36667. ZEA MAYS. **Corn.** An early-ripening variety of flint maize, collected by F. N. Meyer, Peking, China. Reported to be of dwarf growth and of very early ripening habits, occupying the ground from 8 to 10 weeks. Chinese name *To kwei boun tze* (earliest of all maize).

17752. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Changli, Chihli, China. Fruit in size and shape very similar to the jujube seedlings commonly grown in Texas, but rather finer flavored, about an inch long; skin thin but tough, flesh of unusual sprightliness of flavor. A heavy bearer. (Pl. XVIII.)

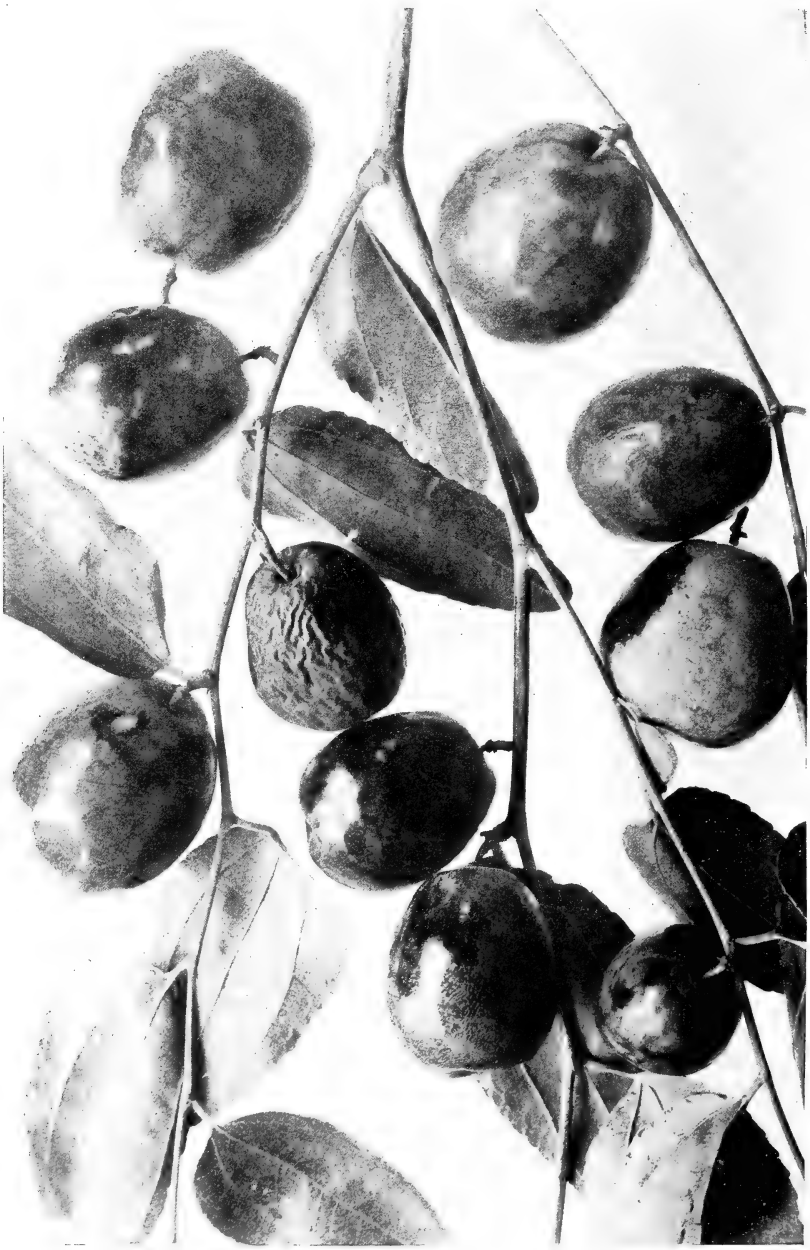
17892. ZIZIPHUS JUJUBA. **Wild jujube.** From F. N. Meyer, Peking, China. A very spiny bush of weedy tendencies, or occasionally a small tree. Found growing in dry, sterile soil. Commonly occurring on the city walls of Peking and neighboring cities. Fruit small, with a pleasant acid taste. Of possible value as a stock for the large-fruited jujubes or tsaos.

19394. ZIZIPHUS JUJUBA. **Chinese jujube.** From F. N. Meyer, Peking, China. A large-fruited variety often met with in Chinese markets. Seedling trees grown at Chico, Cal., now about 20 feet high, have produced large quantities of fruit of most excellent flavor. Seven hundred small boxes of candied fruit from these trees were served at the 1913 banquet of the National Geographic Society.



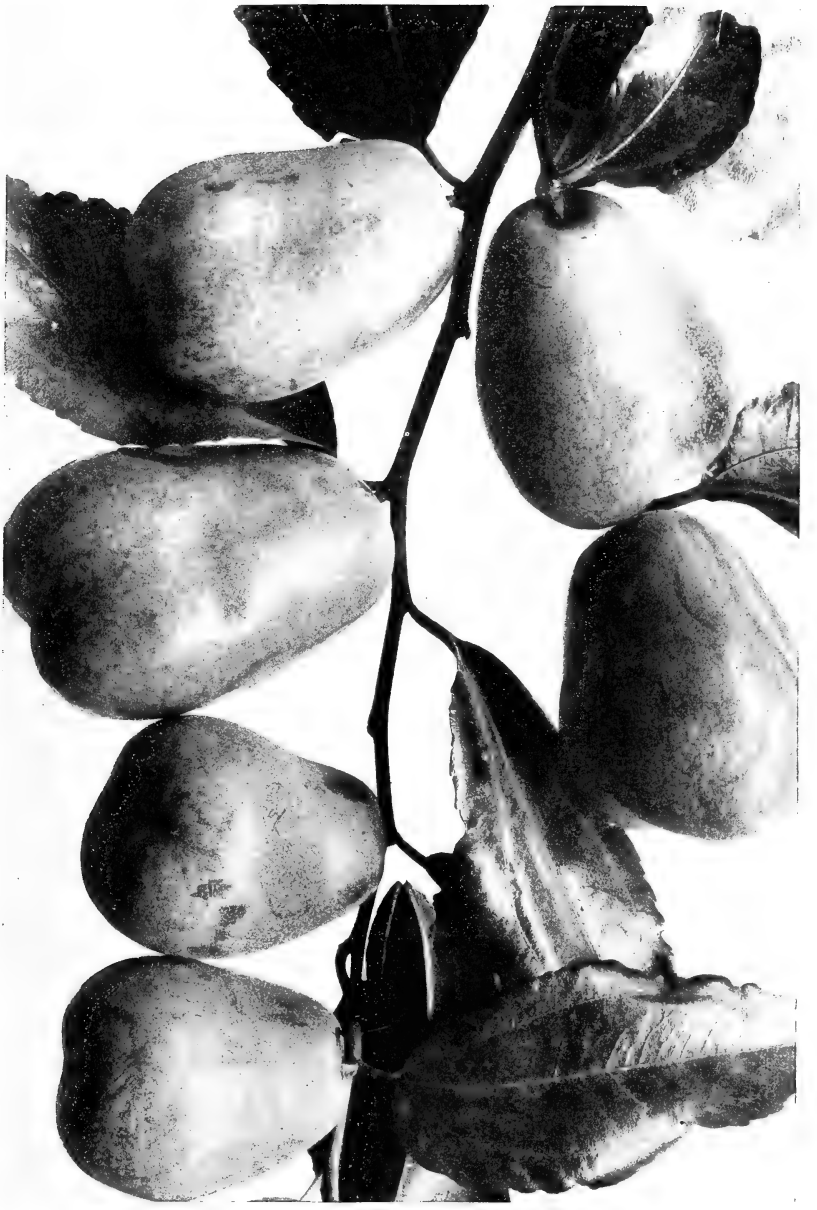
A WILD CHINESE GRAPEVINE (VITIS DAVIDII).

A species sometimes cultivated in the warm, moist climate of the Yangtze Valley for its small, sour berries, which make excellent jelly. Its leaves and shoots are covered with weak prickles, and the plant appears to be peculiarly free from disease. Promising for hybridization. Photographed (P569FS–C) at the Chico Field Station, September, 1915.



A FINE-FLAVORED JUJUBE (ZIZIPHUS JUJUBA) FROM CHANGLI, CHIHLI, CHINA, S. P. I. No. 17752.

Roots of this variety were sent in by Mr. Frank N. Meyer from Changli, Chihli, China. The trees are heavy bearers and the fruits, though of medium size, have a sprightliness of flavor which renders them peculiarly palatable. Photographed (P591FS–C) in the Test Orchard, Chico, Cal., October 18, 1915. (Natural size.)



A LARGE-FRUITED JUJUBE (ZIZIPHUS JUJUBA) FROM SHANSI, CHINA, S. P. I. NO. 22686.

Although many seedling jujube trees are growing in parts of America, the large-fruited, grafted Chinese varieties like this one from the village of Chintzu, Shansi, China, constitute a new fruit for the hot and dry regions of the West. The fruits may be eaten raw, like an apple, and although this variety is not so highly flavored as some of the others and is of a more spongy texture, it is a very desirable fruit for the home. Photographed (P571FS–C) at Chico, Cal., September 15, 1915. (Natural size.)

FRUITING BRANCHES OF THE CHINESE JUJUBE (ZIZIPHUS JUJUBA) IN CALIFORNIA, S. P. I. NO. 30488.

The Chinese jujube grows rapidly and fruits early and heavily in the interior valleys of northern California, where the temperatures rise to 120° F. in midsummer. Unlike most other fruit trees, the twigs which bear the fruits are produced as leafy shoots (resembling compound leaves) in the spring and these fall off with the leaves in autumn after the fruits have dropped. A heavy-bearing, grafted variety from Chingchoufu, Shantung, China, sent in by Rev. W. M. Hays in 1911. Photographed (P59ŽFS–C) at Chico, Cal., October 18, 1915.

22684. ZIZIPHUS JUJUBA. **Chinese jujube.** From F. N. Meyer, Tsintze, Shansi, China. Becomes large tree and attains great age. Old trees are very little branched, spineless, and sucker but little. Fruits produced on Texan trees raised from bud wood of the original importation were large, $1\frac{1}{2}$ inches long and $1\frac{1}{8}$ inches in diameter, oblong, with very fine-grained, heavy flesh. Chinese name *Mu shing hong tsao.*

22686. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Tsintze, Shansi, China. Trees large and spreading, forming a marked contrast to the small, little-branched habit of most other Chinese jujubes. Fruits small, oblong, reddish colored, and possessing a very mellow sweet flavor. Chinese name *Lang tsao,* or "mellow jujube." Trees resist drought and are probably quite hardy. (Pl. XIX.)

30488. ZIZIPHUS JUJUBA. **Jujube.** From Dr. W. M. Hayes, Chinchowfu, China. Cuttings of the largest fruited varieties of jujube to be obtained in the vicinity of Chinchowfu. (Pl. XX.)

35254. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Peking, China. Trees of this variety do not grow very old and possess few suckers. Fruits are either entirely seedless or else possess a very soft kernel not noticeably different in taste and texture from the flesh. The candied fruits have a flavor intermediate between raisins and candied citron rind. Chinese name *Wu hu tsao.*

35287. ZIZIPHUS JUJUBA. **Wild jujube.** The seeds of this plant were collected by F. N. Meyer on the city wall of Peking, China. A very spiny shrub or small tree, very drought resistant, sometimes used in China as a stock for cultivated jujubes and should be tried as a stock for these fruits here.

36852. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Peking, China. A variety with large, round-oblong fruits of a dark mahogany color. Flesh somewhat juicy and quite sweet. Trees of rather small growth, very spiny. Cultivated in Peking gardens under the name *Ta tsao,* meaning " big jujube." Spiny tree, hardy, suited to cultivation in dry and irrigated regions.

36853. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Peking, China. Trees of this variety grow to a considerable size, with heavy trunks and but few spines. Is said to produce more fruit when ringed annually, by removing a thin ring of bark from the trunk. Fruits rather small, nearly spherical, reddish brown, possessing very sweet flesh. Cultivated under the name *Hsiao tsao,* " small jujube."

36854. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Peking, China. Trees of tall growth, few branches, and very large leaves; bearing large elongated fruits tapering toward the end, color rich reddish brown, meat firm, flavor sweet, Possesses fair keeping qualities. Chinese name *Yu tsao*, or tooth jujube, referring to the tapering, cylindrical fruits.

37476. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Lingpau, Honan, China. A variety bearing large reddish-brown fruits. Flesh very sweet but not very firm in texture. Fruits often as large as small hens' eggs. Used by the Chinese baked in bread. Chinese name *Ta hong tsao*, meaning "large red jujube." Hardy tree, drought resistant, spiny.

37484. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Sianfu, Shensi, China. A curious form, producing strikingly zigzag-shaped branches; grown primarily as an ornamental in gardens. The fruits are round, of medium size, and of a pleasant, sweet taste. Chinese name *Sa tsao*, or "tasteful jujube."

38243. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, vicinity of Paihsiangchen, Shansi, China. One of the most famous jujubes in China. Trees of open-spreading habit. Fruits large, often $1\frac{3}{4}$ inches long and $1\frac{1}{2}$ inches in diameter, round oblong, mahogany brown. Flesh very sweet and quite firm. Said to be a very valuable tree. Chinese name *Ta yuan tsao*, meaning "big round jujube."

38244. ZIZIPHUS JUJUBA. **Jujube.** Collected by F. N. Meyer, Paihsiangchen, Shansi, China. A local variety known as *T'iao tsao*, or "stick jujube," because of the elongated, cylindrical shape of the fruits, which are of medium size and a mahogany-brown color. Said to be good when eaten fresh but are best when preserved.

38245. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, vicinity of Paihsiangchen, Shansi, China. Reported to bear fruits of medium size, of tapering, elongated form; good only when fresh. Chinese name *Shui men tsao*, meaning "water breath jujube." Chinese jujubes are grown very commonly on loess, wind-formed soils similar to formations in Iowa and Nebraska. Should be tested there.

38246. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Paihsiangchen, Shansi, China. A variety of medium size, with much elongated and somewhat pointed fruits of light reddish-brown color. These are said to taste best when brandied. Trees vigorous, with long, spreading branches. Chinese name *Chi chin tsao*, or "chicken-heart jujube."

38249. ZIZIPHUS JUJUBA. **Jujube.** From F. N. Meyer, Fuma, Shansi, China. Fruits of this variety are reported to be the largest of all Chinese jujubes; larger than hens' eggs, pear shaped, mahogany brown in color. Chinese name *Li tsao*, said to have arisen from the tradition that this variety originated from grafts on pear roots. Good only when fresh.

41443. ZIZIPHUS MAURITIANA. From J. A. Hamilton, Kamerunga, Australia. Seedlings of Indian jujube. Called tag bush in Australia. Moderate-sized, deciduous fruit tree. Common in villages in western India, where many grafted or inarched varieties are cultivated. Fruit 2 inches in diameter, resembles the crab apple in flavor and appearance. Probably drought resistant. Unripe fruit pickled, ripe fruit dried for chutneys. Leaves used for fodder.

40854 and 40855. ZIZIPHUS sp. **Jujube.** From Dr. Camillo Schneider, Talifu, Yunnan, China. A shrubby form, 10 to 20 feet high, which is said to be cultivated and also to grow wild. Fruits are dark red in color and ovate elliptic in shape.

CHECK LIST OF ALL PLANTS FOR DISTRIBUTION INCLUDING THOSE DESCRIBED IN THE CATALOGUE, SEASON OF 1916–1917.

The capitals following the names and the seemingly unnecessary repetition of the scientific names are for the convenience of the office staff. If in doubt as to which S. P. I. number to choose, indicate the first and this office will make a suitable selection.

27810. Abelmoschus esculentus, S
40030. manihot, Y
40975. Acacia armata, C
39355. horrida, C
39993. Acanthopanax sciadophylloides, Y
18578. Acer truncatum, C
Achradelpha mammosa, M
36693. Acrocomia sclerocarpa, Y
37382. sclerocarpa, Y
42683. Actinidia callosa, Y
11629. chinensis, C
18535. chinensis, C
35133. chinensis, C
41401. chinensis, C
40332. sp., C Y
42827. Adansonia digitata, Y
39542. Adenanthera pavonina, Y
42355. pavonina, M
10727. Adenocarpus frankenioides, C
39837. Adenophora verticillata, Y
39189. Aeria attenuata, Y
41295. Aeschynomene hystrix, Y
41261. Agyneja impubes, Y
42828. Albizzia amara, Y
42809. lebbeck, C M
40776. moluccana, C
38995. sp., C

41303. Alegria divaricata, M
42323. divaricata, M
40673. Aleurites cordata, Y
39532. fordii, Y
39534. fordii, Y
39535. fordii, Y
39536. fordii, Y
41430. fordii, C
43412. fordii, C Y
37926. moluccana, M
40927. moluccana, C
41056. Allium cepa, S
38997. Alnus nepalensis, C
40530. Aloe marlothii, Y
40528. sp., Y
40529. sp., Y
40531. sp., Y
40777. Alpinia nutans, Y
37906. Amburana claudii, M S
21907. Ampelopsis humulifolia, C
7398. Amygdalus communis (Jordan), C
26543. communis, C
28801. communis, C
28802. communis, C
29214. communis, C
29217. communis, C
29218. communis, C
29515. communis (Jordan), C
30408. communis, C
33215. communis (Jordan), C
33216. communis, C
33217. communis, C
33218. communis, C
40668. davidiana, C
37559. pedunculata, C
24807. persica, C
40000. persica, Y
40900. persica, C Y

41498. Amygdalus persica, C
26503. persica nectarina, C
29227. nectarina, C
30648. nectarina, C
34685. nectarina (Quetta), C
34687. nectarina (Crosby), C
39428. sp., Y
40001. sp., C
40008. sp., C
40009. sp., C
40864. sp., C
41166. Anacardium sp., Y
28023. Anchusa myosotidiflora, Y
35283. Annona cherimola, M
36171. cherimola, M
36288. cherimola, M
39352. cherimola, M
39359. cherimola, M
39834. cherimola, C Y
40908. cherimola, C
41493. cherimola, M
41805. cherimola, C
41806. cherimola, C
41807. cherimola, C
36562. × squamosa, M
42836. glabra, M
35590. lutescens, M
42988. marcgravii, M
36532. muricata, M
36700. muricata, M
41433. muricata, Y
39358. purpurea, C M
41488. purpurea, Y
32083. reticulata, M
37933. salzmanni, M
37911. spinescens, M Y
35483. squamosa, M
37908. squamosa, M

40306. Annona squamosa, Y
41464. squamosa, C
41873. squamosa, M
41289. sp., Y
41384. sp., C M
41418. sp., Y
39637. Anthocephalus cadamba, Y
42084. Aralia cordata, Y
40971. Ardisia capollina, Y
41644. Aristolochia sp., Y
42137. Arracacia xanthorrhiza, Y
38890. Artocarpus integra, M
41924. Arundinaria pumila, Y
31835. Asparagus falcatus, M Y
40617. lucidus, Y
34357. Aspidosperma macrocarpon, M
Assonia punctata, M
37910. Attalea sp., Y
23471. Averrhoa bilimbi, M

41431. Baccaurea sapida, Y
41458. Barleria cristata, Y
37901. Baryxylum dubium, Y
42180. dubium, Y
41574. inerme, Y
40708. Bauhinia sp., Y
41645. Begonia sp., Y
38763. Belou marmelos, Y
40774. marmelos, Y
41002. marmelos, Y
40688. Berberis aggregata, Y
36737. chinensis, Y
27118. dictyophylla, Y
43452. fremonti, C
40147. gagnepainii, Y
33020. hookeri, Y
37498. hookeri, Y
40140. viridis, Y
32923. napaulensis, C
40681. potanini, C

13353. Berberis sieboldi, Y
27045. ×stenophylla, C
28380. thunbergii × vulgaris atropurpurea, C
25569. wilsonae, C
40152. wilsonae, Y
33025. yunnanensis, Y
40153. yunnanensis, Y
31289. sp., C
40687. sp., Y
38191. Bertholletia nobilis, Y
40154. Betula ermani, Y
39989. schmidtii, Y
35232. Blighia sapida, M
35599. sapida, M
21808. Bolusanthus speciosus, M
31865. Bouea gandaria, Y
36054. Brassica pekinensis, S
40604. pekinensis, S
42725. Britoa acida, Y
42989. acida, Y
42859. Bulnesia arborea, Y

41447. Caesalpinia coriaria, C
42271. coriaria, Y
30388. gilliesii, C
41323. pectinata, Y
36303. sp., M
32924. Cajuputi cuticularis, C
35866. hypericifolia, M
42829. Calpurnea aurea, Y
41001. Canarium amboinense, M
40827. indicum, Y
41100. Canna edulis, Y
42866. sp., Y
41480. Caragana arborescens, Y
40157. aurantiaca, Y
40158. frutex, Y
22981. sp., Y
40711. sp., Y

36069. Carica candamarcensis, S
42361. papaya, M
42968. papaya, M
42990. papaya, M
41339. sp., C
41506. Carissa carandas, M Y
11734. grandiflora, M
28722. grandiflora, C
32482. grandiflora, C
41504. grandiflora, C
41505. grandiflora, C
40159. Carmichaelia flagelliformis, Y
40713. Caryopteris incana, Y
42362. Cassia siamea, Y
36666. Castanea mollissima, C
37548. mollissima, C
39721. mollissima, Y
40508. mollissima, Y
41357. pumila × crenata, C
41462. pumila × crenata, C
40035. sp., Y
40036. sp., Y
35892. Castilla nicoyensis, M
24714. Catha edulis, M
38836. Celastrus angulatus, Y
37900. Celtis sp., M
39558. Ceratonia siliqua, C
39625. Cereus sp., Y
26562. Chaenomeles cathayensis, C
35639. cathayensis, C
37558. cathayensis, Y
22581. japonica, C
22984. japonica, C
40550. Chaetospermum glutinosum, Y
40392. Chalcas exotica, Y
38515. Chamaedorea sp., Y
Chayota edulis, B
40797. Chenopodium quinoa, S

42202. Chilopsis linearis, C
41259. Chionanthus retusa, Y
42292. Chorisia insignis, C
42526. Chrysophyllum cainito, M
42527. cainito, M
26194. Cicer arietinum, S
26788. arietinum, S
26789. arietinum, S
26990f. arietinum, S
28620. arietinum, S
32265. arietinum, S
32266. arietinum, S
37715. arietinum, S
37716. arietinum, S
37717. arietinum, S
40280. arietinum, S
42454. arietinum, S
42456. arietinum, S
42457. arietinum, S
42458. arietinum, S
42459. arietinum, S
42460. arietinum, S
42461. arietinum, S
42462. arietinum, S
42530. arietinum, S
42531. arietinum, S
37877. Cipura paludosa, Y
41533. Cirsium sp., Y
Citrullus vulgaris, S
41471. vulgaris, S
42716. vulgaris, S
36636. Citrus aurantium, Y
37779. bergamia, Y
37804. grandis (Alamoen), C
39879. grandis, Y
40772. grandis, Y
40917. grandis, Y
35484. hystrix, Y

40824. Citrus hystrix, Y
37772. limetta, Y
37773. limetta, Y
37787. limetta, Y
37789. limetta, Y
23028. limonia, C
40674. medica, Y
40675. nana, Y
40676. odorata, Y
36701. sinensis, Y
36942. sinensis, Y
37757. sinensis, Y
37758. sinensis, Y
37759. sinensis, Y
37760. sinensis, Y
37763. sinensis, Y
37766. sinensis, Y
37767. sinensis, Y
37769. sinensis, Y
37777. sinensis, Y
37782. sinensis, Y
37783. sinensis, Y
37788. sinensis, Y
37792. sinensis, Y
37793. sinensis, Y
37786. sp., Y
40039. sp., Y
38708. Claucena lansium, Y
22620. Clematis recta mandshurica, Y
40844. stanleyi, Y
42688. × vedrariensis, Y
38818. sp., Y
40704. sp., Y
38148. Clerodendron trichotomum, Y
40066. Clethra barbinervis, Y
38987. Clitorea ternatea, Y
40524. Coccothrinax argentea, Y
35141. garberi, M

36927. Cocos coronata, M
36972. coronata, M
37867. coronata, M
37745. romanzoffiana, Y
38399. Collinia sp., Y
Colocasia esculenta, B
38210. Colutea istria, C
37866. Copernicia cerifera, Y
40988. Cordia alba, C Y
37224. obliqua, Y
42759. Cornus paucinervis, Y
22471. Corylus avellana, C
22472. avellana, C
22473. avellana, C
22476. avellana, C
22480. avellana, C
22484. avellana, C
22485. avellana, C
22486. avellana, C
33234. avellana, C
38909. thibetica, Y
35689. Corypha elata, M Y
22436. Cotinus coccygria pubescens, C
40172. Cotoneaster acutifolia villosula, Y
40173. affinis, Y
40162. bacillaris, Y
32933. buxifolia, C
40736. crenulata, C
40171. dielsiana, Y
40164. divaricata, Y
40166. franchetii, Y
38760. frigida, C
40167. henryana, Y
32935. microphylla thymifolia, C
36739. moupinensis, Y
32936. pannosa, C
40169. pannosa, Y
28210. racemiflora, C
32937. rotundifolia, C

28212. Cotoneaster simonsii, C
40175. zabeli, Y
36738. sp., Y
40730. sp., Y
40735. sp., Y
39107. Cracca candida, C
30249. Crataegus douglasii, C
17882. pinnatifida, C
35456. pinnatifida, C
37955. pinnatifida, C
38176. pinnatifida, C
38796. pinnatifida, Y
37011. Crotalaria mesopontica, S
36969. sp., S
41879. Croton tiglium, Y
19204. Cryptostegia grandiflora, M
Cucumis melo, S
40203. Cucumis sativus, C
41424. Cucurbita pepo, S
40618. Cudrania javanensis, Y
34493. tricuspidata, C Y
41690. Cupressus glabra, S
32882. Cydonia oblonga, C
33213. oblonga, C
33214. oblonga, C
42598. Cyphomandra betacea, Y
31905. Cytisus spachianus, S

34079. Deckenia nobilis, M
39964. Delonix regia, Y
13132. Detarium senegalense, M
40177. Deutzia longifolia, Y
38696. Dictyosperma alba, Y
41437. Dioscorea sp., Y
41723. Diospyros ebenaster, Y
16921. kaki, C
21910. kaki, C
22350. kaki, C

22365. Diospyros kaki, C
22367. kaki, C
26902. kaki, C
39554. kaki, Y
42556. kaki, Y
42557. kaki, Y
42559. kaki, Y
42562. kaki, Y
42563. kaki, Y
42675. kaki, Y
37801. lotus, C
38152. lotus, C
40891. montana, C
36166. texana, C
26490. sp., C
40178. Dipelta ventricosa, Y
40027. yunnanensis, Y
40551. Dolicholus phaseoloides, Y
23954. Dolichos lablab, Y
36757. Duchesnea filipendula, Y

12926. Elaeagnus angustifolia, C
26594. angustifolia, C
28806. angustifolia, C
29225. angustifolia, C
29415. angustifolia, C
30063. angustifolia, C
30412. angustifolia, C
30633. angustifolia, C
31822. angustifolia, C
36973. Elaeis guineensis, M Y
40303. melanococca, M
41680. Eleocharis tuberosa, Y
38819. Elsholtzia stauntoni, Y
42765. Engelhardtia aceriflora, Y
35591. Enterolobium cyclocarpum, M
40995. cyclocarpum, C Y
37712. Eremocitrus glauca, Y

41685. Erianthus rufipilus, Y
6191. Eriobotrya japonica, C
6454. japonica, C
6456. japonica, C
31819. Eruca sativa, S
31820. sativa, S
39740. Erythea edulis, Y
39013. Erythrina arborescens, C
42204. flabelliformis, C
43049. poeppigiana, M
42466. vespertilio, C
41324. Escallonia sp., Y
38713. Eucalyptus cladocalyx, S
41623. kirtoniana, C S
38725. longirostris, S
38722. polyanthemos, S
40028. Eucommia ulmoides, Y
41651. Eugenia dombeyi, Y
42366. parkeri, Y
18566. Euonymus japonicus, C
40698. nanus, Y
23027. patens, C
37541. radicans acutus, Y
40581. radicans acutus, Y
38237. sp., Y
39739. sp., Y
40719. Evodia rutaecarpa, C
38817. Exochorda racemosa, Y

36995. Feroniella oblata, Y
39957. oblata, Y
41438. Ficus benjamina, Y
33104. rubiginosa, M
36020. saemocarpa, M
39858. sycomorus, Y
35449. ulmifolia, M
13138. sp., M
37004. Forsythia suspensa, Y
37477. suspensa, Y
41005. Fragaria chiloensis, Y

41006. Fragaria chiloensis, Y
41007. vesca, Y
42721. vesca, Y
39014. Fraxinus floribunda, Y

37131. Garcinia multiflora, Y
39573. multiflora, Y
36497. oblongifolia, M Y
40103. tinctoria, Y
37092. sp., Y
41622. sp., Y
38049. Gaya lyallii, Y
41768. Geranium fremontii, Y
42288. Gleditsia caspica, Y
39978. sinensis, Y

41489. Halesia carolina monticola, Y
41769. Hedysarum pabulare, Y
41652. Hibiscus bifurcatus, M
42832. lunarifolius, Y
37012. sabdariffa, S
42302. syriacus, Y
42303. syriacus, Y
35598. sp., Y
41391. Homoioceltis aspera, C
39872. Hovea linearis, Y
40718. Hovenia dulcis, Y
35592. Hura crepitans, M
40182. Hydrangea bretschneideri, Y
39908. sp., Y
40712. sp., Y
41610. sp., Y
38565. Hymenaea courbaril, M Y
38862. courbaril, Y
42727. courbaril, Y
39118. Hypericum patulum, Y
39644. patulum, Y

39668. Ilex intricata, Y
39427. Incarvillea sinensis, Y

35100. Indigofera amblyantha, Y
35155. amblyantha, Y
40183. gerardiana, Y
37924. Inga affinis, M
35116. Inodes exul, Y
42369. Intsia bijuga, C
37917. Ipomoea fistulosa, M
19203. horsfalliae briggsi, Y
41407. Iris sp., Y
40054. Isopogon anemonifolius, Y

33500. Jasminum beesianum, B
38154. floridum, Y
40705. giraldi, Y
39120. humile, C
38826. sp., Y
38472. Juglans regia, C
39841. regia, C
39844. regia, C
40016. regia, C
18577. Juniperus chinensis, Y
38803. chinensis, Y
27497. pachyphloea, Y
27505. procera, C

39873. Kennedya rubicunda, Y
21203. Kigelia pinnata, M
41679. Koelreuteria formosana, Y
34665. Kokia rockii, Y
38832. Kolkwitzia amabilis, Y

19616. Lagenaria vulgaris, S
36598. vulgaris, S
31102. Lallemantia iberica, S
41931. Lantana sp., Y
33319. Larix dahurica, Y
29530. Lawsonia inermis, M
43450. Lepargyraea argentea, C
43451. argentea, C

34853. Leptospermum scoparium, Y
40732. Lespedeza sp., Y
42539. Leucaena glauca, M
41485. Licania platypus, Y
22988. Ligustrum quihoui, C
38807. quihoui, Y
26877. vulgare, C
36570. Lilium sp., Y
40751. sp., Y
39647. Lindenbergia hookeri, Y
40850. Litchi chinensis, Y
40915. chinensis, Y
40916. chinensis, Y
40973. chinensis, Y
40974. chinensis, Y
41052. chinensis, Y
41054. chinensis, Y
38667. Livistona sp., Y
40186. Lonicera deflexicalyx, Y
22548. maackii, Y
33435. maackii, Y
40187. quinquelocularis, Y
37644. ruprechtiana, Y
42692. similis, Y
35188. thibetica, Y
40690. thibetica, Y
40185. trichosantha, Y
33055. xylosteum, Y
36748. sp., Y
39634. sp,. Y
39697. sp., Y
40691. sp., Y
40695. sp., Y
39859. Loroma amethystina, M
41332. sp., Y
41330. Lupinus sp., S

40831. Macadamia ternifolia, C
38129. Macaranga tanarius, Y

37616. Malus baccata, Y
28489. × sylvestris, C
40619. formosana, Y
27060. sylvestris, C
27061. sylvestris, C
27152. sylvestris, C
27153. sylvestris, C
30229. sylvestris, C
30326. sylvestris, C
30327. sylvestris, C
30353. sylvestris, C
31653. sylvestris, C
35636. sylvestris, C
39829. sylvestris, C
27108. sp., C
42813. Mammea americana, Y
7104. Mangifera indica, M
8730. indica, M
10637. indica, M
10662. indica, M
11645. indica, M
23426. indica, M
29333. indica, M
39338. Manihot dichotoma, S
39340. heptaphylla, C M
39339. piauhyensis, C M
42463. Maranta arundinacea, B
42718. Maximilianea sp., Y
26323. Maytenus boaria, C
39123. Meibomia floribunda, Y
41473. purpurea, Y
39124. tiliaefolia, Y
41681. Melastoma molkenboerii, Y
35212. Melicocca bijuga, M
35970. Mikania sp., Y
42541. Mimosa sensitiva, Y
41809. Mimusops elengi, M Y
40913. Moringa oleifera, M

27048. Morus alba, C
40215. alba, Y
30330. nigra, C
39096. sp., Y
41508. Musa sp., C Y
36702. Myrciaria cauliflora, Y
41057. floribunda, Y
41256. Myrica rubra, Y

42384. Nephelium lappaceum, Y
42385. mutabile, Y

12569. Olea europea, C
12684. europea, C
12685. europea, C
12910. europea, C
13257. europea, C
13567. europea, C
27172. europea, C
27173. europea, C
41923. Ophiopogon japonicus, Y
38839. sp., Y
36258. Ormosia monosperma, Y
36359. sp., Y
36394. sp., Y
29183. Oroxylon indicum, M
40033. Osteomeles schwerinae, Y
36731. Ostryopsis davidiana, Y
31856. Oxyanthus pyriformis, M

36550. Pahudia rhomboidea, M
38175. Parinari excelsum, Y
35035. Parkia timoriana, M
35469. timoriana, C
28674. Parmentiera cereifera, M
41722. cereifera, Y
39955. Passiflora edulis, C
40852. edulis, B C
40992. edulis, C M
42035. ligularis, C

39223. Passiflora maliformis, C
42032. mixta, C
38806. Paulownia fortunei, Y
42036. mikado, C Y
37735. Pelargonium odoratissimum, Y
36017. Pentapetes phoenicea, Y
41772. Pentstemon palmeri, Y
42083. Perilla frutescens, Y
35991. Pernettya mucronata, Y
36139. mucronata, Y
19297. Persea americana, M
26690. americana, M Y
26698. americana, M
26699. americana, M
26707. americana, M
34904. americana, M
36270. americana, M
38552. americana, Y
38558. americana, Y
39369. americana, M
39370. americana, M
40978. americana, Y
40979. americana, Y
40981. americana, Y
40982. americana, Y
40059. Persoonia media, Y
40062. Petrophila sessilis, Y
33997. Phalocallis herberti, Y
37944. Phoebe nanmu, Y
40616. nanmu, Y
39654. Phoenix ouseleyana, Y
24760. Phyllostachys bambusoides, B
24759. pubescens, Y
42542. Phytolacca dioica, C
31391. Pinus eldarica, Y
35208. eldarica, Y
24338. peuce, Y
35293. sinensis, C
35294. thunbergii, Y
41306. Piptadenia rigida, Y

41880. Piratinera alicastrum, Y
18273. Pistacia chinensis, C
40662. chinensis, C
8480. vera, C
8482. vera, C
12783. vera, C
12815. vera, C
17250. vera, C
36263. sp., C
43430. Pithecolobium ligustrinum, Y
39044. Pittosporum floribundum, Y
39727. floribundum, Y
36606. Pleiogynium solandri, M
41188. Polymnia sonchifolia, Y
26614. Populus berolinensis, C
22447. brevifolia, Y
34790. deltoides, Y
22363. simonii, C Y
34779. simonii, C
26812. sinensis, C
22861. suaveolens, C
39900. przewalskii, Y
38255. tomentosa, C
33206. sp., C
42694. Potentilla fruticosa vilmoriniana, Y
41564. sp., Y
41260. Premna microphylla, Y
40857. Primula littoniana, S Y
40023. Prinsepia uniflora, Y
40845. Protea sp., Y
17154. Prunus armeniaca, C
18260. armeniaca, C
20072. armeniaca, C
28956. armeniaca, C
28962. armeniaca, C
31755. armeniaca, C
32348. armeniaca, C

32833. Prunus armeniaca, C
32834. armeniaca, C
34269. armeniaca, C
38281. armeniaca, C
40012. armeniaca, C
40013. armeniaca, C
33222. avium, C
33223. avium, C
28950. cerasifera divaricata, C
37463. cerasifera divaricata, C
37464. cerasifera divaricata, C
38421. cerasifera divaricata, Y
38422. cerasifera divaricata, Y
38423. cerasifera divaricata, Y
38424. cerasifera divaricata, Y
26246. conradinae, C
26248. conradinae, C
26250. conradinae, C
32751. domestica, C
33224. domestica, C
34267. domestica, C
34268. domestica, C
37645. grayana, Y
34601. mira, C
28685. mume, C
41061. mume, C
40620. nipponica kurilensis, Y
38410. padus,
38425. prostrata, Y
18587. pseudocerasus, C
39621. serrulata, C
26886. simonii, C
32669. spinosa × domestica, C
32670. × domestica, C
32671. × domestica, C
32673. × domestica, C
40999. yedoensis, Y
41465. sp., C

24628. Pseudotsuga taxifolia, Y
38757. Psidium cattleianum, C
28134. guajava, M
40343. guajava, M Y
42039. guajava, M
42876. Psoralea glandulosa, Y
32121. Pterocarpus indicus, M
38427. Pterocarya fraxinifolia, Y
8646. Punica granatum, C
12568. granatum, C
13298. granatum, C
27961. granatum, C
27966. granatum, C
30615. granatum, C
33227. granatum, C
38185. granatum, C
40856. granatum, C
43445. Pyrus calleryana, C
21983. chinensis, C
30329. chinensis (Kutcha), C
30351. chinensis, C
30352. chinensis, C
30360. chinensis, C
28497. chinensis × communis, C
43443. chinensis × communis, C
43444. chinensis × communis, C
32735. communis, C
32738. communis, C
33207. communis, C
33208. communis, C
40331. mamorensis, Y
25622. sp., Y
26485. sp., C
26489. sp., C
29050. sp., C
37071. sp., C
40019. sp., C
40865. sp., Y
40866. sp., Y

40867. Pyrus sp., Y
40868. sp., Y
40869. sp., Y
40870. sp., Y
42304. sp., Y

39723. Quercus insignis, Y

41810. Randia aculeata, Y
41495. sp., Y
41030. Raphanus sativus, S
36735. Rhamnus sp., Y
39433. sp., C
37384. Rheedia edulis, N Y
39052. Rhododendron arboreum, Y
39054. arboreum, Y
39053. campbelliae, Y
38413. dauricum, Y
40716. Rhus javanica, Y
32390. lancea, C
40717. potanini, Y
39706. sp., Y
37621. Ribes alpinum, Y
nigrum, Y
42695. Rodgersia aesculifolia, Y
38171. Rollinia deliciosa, M
40344. sp., M
42975. Rosa bella Y
38166. davidii elongata, Y
39593. gigantea, Y
29729. gigantea ×, C Y
29730. gigantea × Reine Marie Henriette, Y
38163. helenae, Y
40625. hugonis, Y
32955. indica, C
38823. multiflora cathayensis, Y
42981. multiflora cathayensis, Y
40193. sertata, Y
40699. sweginzowii, Y

35989. Rosa sp., Y
40701. sp., Y
40702. sp., Y
40904. Rubus canadensis, Y
40194. giraldiana, Y
40595. irenaeus, Y
39187. rosaefolius, C
36571. sp., Y
36758. sp., Y
36759. sp., Y
39069. sp., Y
39181. sp., Y
41442. sp., C
41553. sp., Y
41554. sp., Y
41598. sp., Y
41922. sp., Y
41964. sp., Y
41965. sp., Y
41966. sp., Y
41967. sp., Y
41968. sp., Y
41969. sp., Y
41970. sp., Y
41971. sp., Y
41972. sp., Y
41973. sp., Y
41974. sp., Y
41976. sp., Y
42476. sp., Y

40612. Saccharum officinarum, Y
41154. officinarum, Y
22987. Sageretia theezans, C
34355. Saguerus mindorensis, Y
26762. Salix babylonica, C
28710. chilensis, C
33135. fragilis pendula, C
22450. matsudana, C

17737. Salix sp., C
29143. sp., C
38233. sp., C
38238. sp., C
39922. sp., Y
38654. Samanea saman, C
36744. Sambucus racemosa, Y
36378. Sapindus saponarius, Y
42728. saponarius, Y
41584. Saussurea sp., Y
38855. Saxifraga sp., Y
40025. Schizandra sphenanthera, Y
37153. Schizonotus sorbifolius, Y
40068. Schizophragma hydrangeoides, Y
38112. Seaforthia elegans, Y
41311. Sida bonariensis, Y
42824. Sideroxylon dulcificum, Y
37703. Sindora supa, M
38548. Solanum muricatum, Y
21967. Sophora davidii, C
40707. davidii, Y
39421. tomentosa, C
41703. Sorbus domestica, Y
42373. Spathodea campanulata, Y
35884. Spondias cytherea, M
40098. lutea, M
37861. tuberosa, M
37862. tuberosa, M
37863. tuberosa, M
37864. tuberosa, M
37865. tuberosa, M
42575. Statice arborea, C
42729. Stigmaphyllon sp., Y
9611. Strychnos spinosa, M
42596. spinosa, M Y
42903. spinosa, M
39334. Stryphnodendron barbatimam, Y
38541. Styloma pacifica, M
38542. thurstoni, M

36170. Swietenia mahagoni, M
40560. mahagoni, Y
38498. Synecanthus sp., M Y
38828. Syringa amurensis, Y
38829. sp., Y
40709. sp., Y

34804. Tamarix pentandra, Y
22867. sp., C Y
29149. sp., C
35261. sp., C
41576. Terminalia catappa, C
36016. edulis, M
30913. Thespesia grandiflora, M
39392. Thrinax microcarpa, Y
34541. Thuja orientalis, Y
38797. orientalis, Y
39302. Thunbergia sp., Y
36159. Tigridia sp., Y
42331. Tipuana tipu, M
42549. tipu, C
40029. Trachycarpus excelsus, B
41871. takil, Y
36118. Trichosanthes kirilowii, C

32829. Ulmus densa, C
32830. densa, C Y
32831. densa, C
22975. pumila, C Y
40898. pumila, C Y
38492. vegeta, Y
34063. sp., C
39342. Verschaffeltia splendida, Y
40198. Viburnum lobophyllum, Y
22978. macrocephalum, Y
40901. Vigna sesquipedalis, S
40902. sesquipedalis, S
21976. Vitex incisa, C
29019. Vitis davidii, C
41877. davidii, Y

38853. Vitis tiliaefolia, Y
41707. tiliaefolia, Y
40733. sp., C

39431. Xanthoceras sorbifolia, Y

41775. Yucca angustissima, Y

39631. Zanthoxylum sp., Y
36667. Zea mays, S
35301. Zelkova serrata, M
17752. Ziziphus jujuba, C
17892. jujuba, C
19394. jujuba, C
22684. jujuba, C
22686. jujuba, C
30488. jujuba, C
34054. jujuba, M
35254. jujuba, C
35287. jujuba, Y
36852. jujuba, C
36853. jujuba, C
36854. jujuba, C
37070. jujuba, C
37476. jujuba, C
37484. jujuba, C
38243. jujuba, C
38244. jujuba, C
38245. jujuba, C
38246. jujuba, C
38249. jujuba, C
39194. jujuba, Y
42306. jujuba, Y
42308. jujuba, Y
41443. mauritiana, C
40854. sp., C
40855. sp., C

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